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While previous research has been conducted with sheltered homeless women, there is a gap in scientific knowledge relevant to the health-promoting behaviors of sheltered homeless women and factors associated with these behaviors. Using Pender's Health Promotion Model as the framework, a cross-sectional, correlational design was used to obtain data from a convenience sample of 126 sheltered homeless women in central North Carolina. Measures used for the study were the Health Promotion Lifestyle Profile II, Self-Rated Abilities for Health Practices Scale, and Personal History Form. Descriptive statistics and correlation coefficients were calculated.

The majority (54%) of the women using the shelters were African American. The average age was 42 years old and 70% were 40 years or older. Most reported being single, high school graduates, unemployed, and lacking health care coverage. Many of the women reported they were not the primary caretaker of their children.

Homeless women reported many barriers to health care services, although most reported they were able to access the multiple health care services available for physical health problems and for preventive care check-ups. Access to mental health and substance abuse treatment services and dental care were, however, difficult. Although more than half of the women reported their health was good to excellent, significant physical and mental health problems such as chronic physical disorders (e.g., hypertension, asthma, arthritis, STDs) were reported. More than half the women reported symptoms of depression but fewer than half reported symptoms of anxiety.

There were positive significant correlations between health rating and the scores on HPLP II total scale and all subscales (health responsibility, physical activity, nutrition,

spiritual growth, interpersonal relations, and stress management) and the SRAHP total scale and the subscales of psychological well-being and nutrition. There were positive correlations between social and emotional support and the HPLP II total scale and subscale scores (spiritual growth, interpersonal relations, and stress management. There were significant positive correlations among all scores on the SRAPH and the HPLP II. Self-efficacy for health practices and social and emotional support were significant predictor variables for health promoting behaviors and explained 55.1% of the variance in health promoting behaviors. This study is the first to use Pender's HPM to examine the relationships between self-efficacy for health practices, mental health, and health-promoting behaviors of sheltered homeless women.

HOMELESS SHELTERED WOMEN'S HEALTH PROMOTION BEHAVIORS

By

Frances Anderson Ballard

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Approved by

_____

Committee Chair

To my husband, Buck, and our sons Scott and Adrian who supported me during this journey with their love and understanding. To my late parents Dora and Willis Anderson who instilled in me a desire to learn.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Homelessness is rapidly growing in the United States (U.S.) and is challenging society and the health care system. Homeless persons are at a greater risk for acute and chronic mental and physical health problems than people with permanent dwellings. Homeless women, often found in community shelters, have health problems that may have led to their homelessness, but they also are faced with many health issues as a result of being homeless. Barriers to health-promoting behaviors may be associated with poor health outcomes for this population of women. Although some researchers have identified a number of physical and psychological health problems of sheltered homeless women, researchers in only two studies have addressed health-promoting behaviors of homeless women living in shelters (Smith, 2005; Wilson, 2005). Nurses have an opportunity to help these women develop health- promoting behaviors as a resource for living rather than simply as a way to prevent disease. However, there is a gap in scientific knowledge relevant to the health-promoting behaviors of sheltered homeless women and factors that are associated with these behaviors. If factors associated with health-promoting behaviors of sheltered homeless women were known, nurses could better develop interventions to improve health promotion in this unique population and advocate for legislative policy changes and money to support programs to meet the women's health-related needs.

Purpose of the Study

The primary purpose of the study was to describe the sociodemographic characteristics and personal factors, health status, health practices, perceived self-efficacy, perceived barriers, social and emotional support, and health-promoting behaviors of sheltered homeless women in central North Carolina. This study identified factors that influence the women's participation in health-promoting behaviors and provides guidance for developing appropriate nursing interventions to increase health-promoting behaviors in this population. Additionally, results from the study may lend support to interventions that are designed to meet the overall objective of *Healthy People 2010* to increase quality and years of healthy life and to eliminate health disparities between homeless people and people who are housed (U.S. Department of Health and Human Services [USDHHS], 2004). Accordingly, more specific information about health-promoting behaviors of sheltered homeless women is necessary in order to better target policy, outreach, and social service efforts.

Significance of the Study

This study makes a significant contribution to nursing knowledge by describing and documenting the health-promoting behaviors of sheltered homeless women to better target health interventions which facilitate behaviors that enhance and sustain health. Findings from this study may be used to develop and test evidence-based nursing interventions to promote healthy lifestyle behaviors and thus reduce the mortality and morbidity rates of sheltered homeless women. Findings also may be used to inform public policy and promote legislation that identifies and provides funding for those programs that assure access to proven effective services, reducing the effects of health disparities on the length and quality of life for this vulnerable population.

Specific Aims

The primary aim of this study was to describe existing health promotion behaviors of sheltered homeless women and to look at cross-sectional relationships between sociodemographic characteristics, health status, health practices, and self-efficacy and health promotion behaviors.

Research Questions

The research questions for investigation in this study were:

1. What are the socio-demographic characteristics of sheltered homeless women?
2. What are the current health status and health practices of sheltered homeless women?
3. What are the health-promoting behaviors of sheltered homeless women?
4. What are the relationships between sociodemographic and personal factors (age, marital status, education, employment status, number of children, race, healthcare coverage, mental health indicators) and health-promoting behaviors of sheltered homeless women?
5. What are the relationships between socio-demographic and personal factors (age, marital status, education, employment status, number of children, race) and other constructs including self-rated health status, perceived self-efficacy, perceived barriers, social and emotional support, homeless history, and health-promoting behaviors of sheltered homeless women?
6. Among Pender's Health Promotion Model (HPM) categories of individual characteristics and experiences and behavior specific cognitions, which

variables contribute the most to the variance explained in the health-promoting behaviors of sheltered homeless women?

Definition of Terms

Homeless Individual

For the purpose of this study, “a homeless individual” is defined as someone who lacks a fixed, regular, and adequate nighttime residence or whose nighttime residence is a temporary shelter, welfare hotel, transition housing, or any public or private place not designated as sleeping accommodations for human beings (McKinney Act, 1987). Homelessness is operationally defined as staying overnight prior to the day of data collection in a supervised publicly or privately operated shelter designed to provide temporary living accommodations for homeless women (National Coalition for the Homeless [NCH], 2007a).

Health Promotion

Health promotion is defined as “the process of enabling people to increase control over, and to improve, their health” (World Health Organization [WHO], 1986, p. 1), motivated by the desire to promote or increase personal health and well-being (Pender, 1987). Health-promoting behavior describes activities directed toward developing resources that guide an individual to realize their highest potential for well-being by interacting with the environment to achieve or maintain health (Pender, Murdaugh, & Parsons, 2006). Health-promoting behaviors were operationally defined by the scores on the total scale and the six subscales (health responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships and stress management) of the Health-Promoting Lifestyle Profile II (Walker & Hill-Polerecky, 1996).

Health Status

The WHO (1986, 2004) defined health as “a resource for daily living… a positive concept emphasizing social and personal resources as well as physical capacities” (p.1). Health status is the current level of health of the individual as subjectively assessed by the individual. It includes the current status of present wellness, fitness, and any underlying diseases or injuries. Health status was operationally defined by the score for one question, “How would you describe your health” (excellent, very good, fair, poor, or don’t know /not sure)? Physical health status was operationally defined by the score on the question “Have you been told by a doctor, nurse, or other health care professional you have or had arthritis, asthma, cancer . . .?” Mental health status was operationally defined by the score on the question “How many days has each of the following occurred in the past 2 weeks?” An example of an item is “Little interest or pleasure in doing things.”

Individual Characteristics and Personal Factors

1. Prior related behavior is proposed as behavior in the past that influences or predicts behavior in the future. Prior related behavior was operationally defined as usual location of health care, prior medical/dental check-ups, and smoking status.
2. Personal factors are categorized as biological, psychological, and sociocultural. Biological factors were operationally defined as age, perceived health status, and number of chronic conditions. Psychological factors were operationally defined as number of days of mental health distress as defined by the women in the past two weeks and ever being diagnosed with mental illness. Sociocultural factors were operationally defined as race/ethnicity, marital status, education, number of children, employment status, and health care coverage.

Behavior-Specific Cognitions and Affect

1. Perceived barriers to actions are defined as real or imagined hurdles that can decrease commitment to a plan of action. Perceived barriers were operationally defined by responses to “What prevents you from getting health care?” and “What things stop you from taking part in health promoting behaviors?’
2. Perceived self-efficacy is “the belief in one’s capability to organize and execute the sources of action required for managing prospective situations” (Bandura, 1986, p. 391). In the HPM, self-efficacy is influenced by activity-related affect (Pender, 1996). Perceived self-efficacy for a given behavior emerges from a person’s cognitive integration of all the information the person has about the situation (Becker, Stuifbergen, Oh, & Hall, 1993). Perceived self-efficacy was operationally defined by the total scale and the four subscales (exercise, psychological well-being, nutrition, and health practices) of the Self-Rated Abilities of Health Practices Scale (Becker et al., 1993).
3. Interpersonal influences are ideas or cognitions concerning the beliefs and attitudes of others. Interpersonal influences were operationally defined as a response to the question “How often do you get the social and emotional support you need?”
4. Situational influences are perceptions and cognitions of options available and features of the surroundings that can facilitate or impede health-promoting behavior (Pender, 1996). Situational influences were operationally defined by homeless history and veteran status.

Behavioral Outcome

The behavioral outcome in the HPM is the action outcome that is a health-promoting behavior (Pender et al., 2006). Health-promoting behavior is defined as a measure of a positive state in regard to health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth, and stress management. Health-promoting behaviors were operationally defined by the total scale and the six subscales (health responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships and stress management) of the revised Health-Promoting Lifestyle Profile II [(HPLP II); Walker & Hill-Polerecky, 1996; S. N. Walker, personal communication, October 27, 2005].

Assumptions

1. Health professionals are a part of the interpersonal environment and recognize the importance of healthy lifestyle behaviors in sheltered homeless women.
2. Homeless women living in shelters recognize the importance of incorporating health-promoting behaviors in their daily activities and can be educated about the importance of incorporating health-promoting behaviors into their daily lives.
3. Engaging in health promotion behaviors can improve and promote health, well-being, and quality of life in spite of sheltered homeless women facing socioeconomic and personal adversities.
4. Homeless women living in shelters will provide their best and truthful answers on the questionnaire at the time of data collection.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents an overview of homelessness in the U.S., risk factors for homelessness, and the effects of homelessness on health. The chapter also presents Pender's Health Promotion Model (HPM), the theoretical framework for this study. An integrated review of literature related to the HPM is presented and the usefulness of the model to explore health-promoting behaviors in diverse populations is discussed. Finally, an expectation of the model to explain health-promoting behaviors of sheltered homeless women is presented.

Homelessness

Homelessness in the U.S. has significantly increased in recent years and is a concern for communities [National Coalition for the Homeless (NCH), 2007b]. Depending on how homeless is defined, estimates of homelessness will vary. Homeless persons have been defined as those who live in shelters, in vehicles, on the street, or in other locations not intended as residences (U.S. Conference of Mayors, 2007). In January, 2005, a point-in-time count estimated approximately 744,313 people experienced homelessness on any given night in the U S. (National Alliance to End Homelessness, 2007). According to the Annual Homelessness Assessment report to Congress, on an average day between February 1 and April 1, 2005, there were an estimated 334,744 sheltered homeless persons in the U.S. (U.S. Department of Housing and Urban Development [USHUD], 2007). In 2005, the estimated population of the U.S. was 296,410,404 (U.S. Census Bureau, 2005). Using this figure, approximately 1.1% of the U.S. population may experience homelessness on any given day. According to a report

from the National Coalition for the Homeless (NCH, 2007b) the homeless population included 42% African Americans, 39% Whites, 13% Hispanics, 4% Native Americans, and 1% Asians. Single men comprised 51% of the homeless population, families with children 30%, single women 17%, and unaccompanied minors 2%. An estimated 16% of homeless people were “mentally ill,” 26% were abusing substances, and 46% suffered from a chronic physical health problem (NCH, 2007a). Additionally, 25% of those who were homeless were 25-34 years old and 13% were unemployed. Typically, homeless women have been younger than homeless men (U.S. Conference of Mayors, 2006). Homeless people are poorer and have less formal education, have more health challenges, and are less likely to have health insurance.

Homelessness has been associated with images of a drunken man, a hobo or drifter, with dirty torn clothes or a woman dressed in rags with her belongings packed in garbage bags. Today the picture of homelessness includes families, women with children, male and female veterans, and the elderly living in cities and in rural areas (NCH, 2007a). The homeless are no longer an “invisible population” that can be ignored. Homeless people can be found on the street, in shelters, doubling up with a friend, in jails and prisons, and in psychiatric and acute care hospitals. Homelessness is a result of structural, economic, and policy factors (affordable housing, unemployment, and government safety nets) and personal disabilities (physical, mental, or substance abuse). Lack of affordable housing (urban renewal), lack of jobs that pay a living wage (decrease in demand for unskilled occupations), relationship breakdowns (increased rates of divorce, conflict-ridden step-relationships), lack of adequate benefits for those who cannot work (physical/ mental disorders), and lack of access to affordable health care are factors placing individuals at high risk of homelessness (Aday, 2001).

Since the 1980's, the availability of low-income housing has declined appreciably (Aday, 2001). The growth in the economy increased the cost of housing, making it more difficult for homeless people or low-income people to find permanent housing. The shortage of decent, safe and sanitary housing and the limited number of housing assistance programs placed homeless people in situations that exacerbate medical and psychosocial problems. Low-income people or people with physical, psychological, or social limitations (mental illness, substance abuse, or family violence) are having difficulty finding affordable housing (Aday, 2001; NCH, 2007a). Affordable housing units are decreasing as the nation's urban and downtown areas are being revitalized. Low-income individuals and families are being displaced as rebuilt and renovated housing is sold to middle and upper class individuals and families (Solutions for America, 2003). Construction of low-incoming housing has not kept pace with attrition. Also withdrawal or reduction of federal funding that subsidized low-income housing has contributed to increased homelessness (Burt, 2001; Susin, 2000). Additionally, the recent collapse of the sub-prime lending market endangers the home ownership of millions of low and middle-income first time homebuyers who will not be able to refinance and/or afford renegotiated mortgage payments. Rising interest rates are another obstacle to home ownership and growing numbers of people, including young entry level workers with college loan debt, are struggling to maintain monthly mortgage payments (U.S. Department of Housing and Urban Development [HUD], 2006).

Welfare reform has limited the period of time that benefits are available to low-income individuals and families. Social and economic inequities by race and gender contribute to the increasing number of homeless people. Women and minorities are finding it increasingly difficult to afford housing. People with chronic mental illness who

are being discharged from state psychiatric hospitals are another vulnerable population (Aday, 2001). Current state welfare benefits are below the poverty level in every state and as much as 75% below the poverty level for some states (Aday, 2001). Contrary to some beliefs, having a job and/or welfare benefits does not prevent poverty or homelessness.

The shortage of decent, safe, and sanitary housing and the limited number of housing assistance programs place homeless people in situations that exacerbate medical and psychosocial problems. Homeless people who cannot afford treatment for their health problems, often find it difficult to negotiate the health care systems, and consequently received no care or use emergency departments as their primary source of care. In addition to their many physical health care needs, homeless people have increase prevalence of suicide, depression, mental illness and substance abuse (SKINmed, 2003).

Health and social problems that homeless people face may continue from their childhood. Homeless persons may have experienced multiple problems as children. Although housing instability and poverty increase the risk for continued homelessness, other factors increase vulnerability to homelessness. Out-of-home placement (foster-care or institutional placement), family disruptions such as physical and mental illness, sexual/physical abuse, substance abuse, incarceration of an adult care giver, housing poverty and instability (i.e., residing in public housing or childhood homelessness), and other problems of an interpersonal nature during childhood have all been identified as predictors of homelessness in previous studies (Baum & Burnes, 1993; Koegel, Melamid, & Burnam 1995). Koegel et al. (1995) found that homeless persons are 4.7 to 7.2 times more likely than the general public to have experienced out-of-home

placement (foster-care or institutional placement) as children. Some report that three in ten U.S. homeless adults report a history of foster care (Roman & Wolfe, 1995). Early experiences of not having a secure and stable place to live seem to make it more difficult over the long term to regain and maintain housing after it has been lost. Homeless persons who experienced out-of-home care were more likely to have their own children in foster care. Homeless people who are whites were more likely than homeless people who are Hispanics or African Americans to have experienced foster care (Roman & Wolfe, 1995).

Homelessness has a negative effect on overall health, and can be both cause and effect of poor health. It complicates the management of chronic illnesses such as diabetes, hypertension, and asthma by making it difficult for homeless persons to receive adequate health care. In addition to chronic illnesses like diabetes, renal and liver disease, and respiratory problems, homeless persons are more likely to have higher risk factors for early death from HIV/AIDS, hypothermia and frostbite, and life-threatening skin disorders. Other health hazards that affect homeless people are communicable diseases such as influenza and parasitic infestations and other conditions like violence and trauma (Nyamathi, Leake, & Geldberg, 2000; O'Connell, 2004). Additionally, mental illness and substance abuse are well-documented primary and/or co-morbid conditions in the homeless population (North Carolina Department of Health and Human Services [NCDHHS], 2007; O'Connell, 2004). Delays in seeking medical attention, nonadherence to therapy, and cognitive impairment have led to increased use of emergency rooms for common illnesses and injuries as well as increased hospitalization when care can not be provided in shelters or on the street (Sachs-Ericsson, Wise, Debrody, & Paniucki, 1999). A 1994 study of 6,308 homeless persons in

Philadelphia found the age-adjusted mortality rate among the homeless was 3.5 times that of Philadelphia's general population (Link et al., 1994). The high morbidity and mortality rate for homeless persons, many of them women, may be explained by their lifestyle behaviors. However, little research has been conducted with homeless women to examine their lifestyle behaviors and those factors that may contribute to their inability to carry out health-promoting behaviors.

Homeless women face many social, economic and health factors that may be correlated with increased risk of health problems. For example, many homeless women are fleeing from violence by an adult partner and other forms of victimization such as sexual and physical abuse. In addition, homeless women face economic problems such as unstable housing, unemployment, poverty, limited child care options, and lack of insurance (Lewis, Andersen, & Gelberg, 2003). Research has shown that among homeless women the risk of poor health, injuries and illnesses, and chronic health problems as well as barriers to health care is greater than in the general population (Gelberg, Doblin, & Leake, 1996; Rosengard, Chambers, Tulsky, Long, & Chesney, 2001). Thus, seeking attention for health problems and participating in healthy lifestyle behaviors may be viewed as a lower priority than safety and security or may not be achievable for homeless women.

Some lifestyle behaviors of homeless women place them at an increased risk for health problems. Behaviors like smoking, using alcohol and other drugs, engaging in high risk sexual activities (“survival sex”) and living "on the street" contribute negatively to health (Schaffer, Mather, & Gustafson, 2000). Living in abusive relationships is an additional risk factor, exposing women to physical and emotional battering that can lead to homelessness and cause problems like chronic pain, appetite and sleep disturbances,

anxiety, low self-esteem, and depression (Humphreys, Lee, Neylan, & Marmar, 2000). A review of the literature provides many studies that focus on the health care needs of homeless women. Cheung and Hwang (2004) identified HIV/AIDS, drug overdose, and depression and suicide among the leading causes of death for women 18 to 64 years old living in Toronto shelters in 1995. Other causes of death were exposure, motor vehicle and firearm injuries, septicemia from staphylococcus, epilepsy, and acute myocardial infarction. Other problems include health care needs related to family planning, pregnancy, female genitourinary disorders, and sexually transmitted disease (Lewis et al., 2004; Stainbrook & Hornick, 2006). Klitzing (2004) found that homeless women suffered from high levels of stress and depression from dealing with negative life events and hassles of living in the shelter, and that the women sought out social support and leisure activities to cope with the stress. A study that described health status and health resources of homeless women and children revealed that women who were well and drug free when they became homeless developed addictive and psychiatric illnesses over time, reporting higher prevalence of alcoholism, illegal drug use, and psychiatric illnesses (Winkleby & White, 1992). Victimization and trauma from battering and separation from family members are other sources of stress in the lives of sheltered homeless women (Stainbrook & Hornick, 2006).

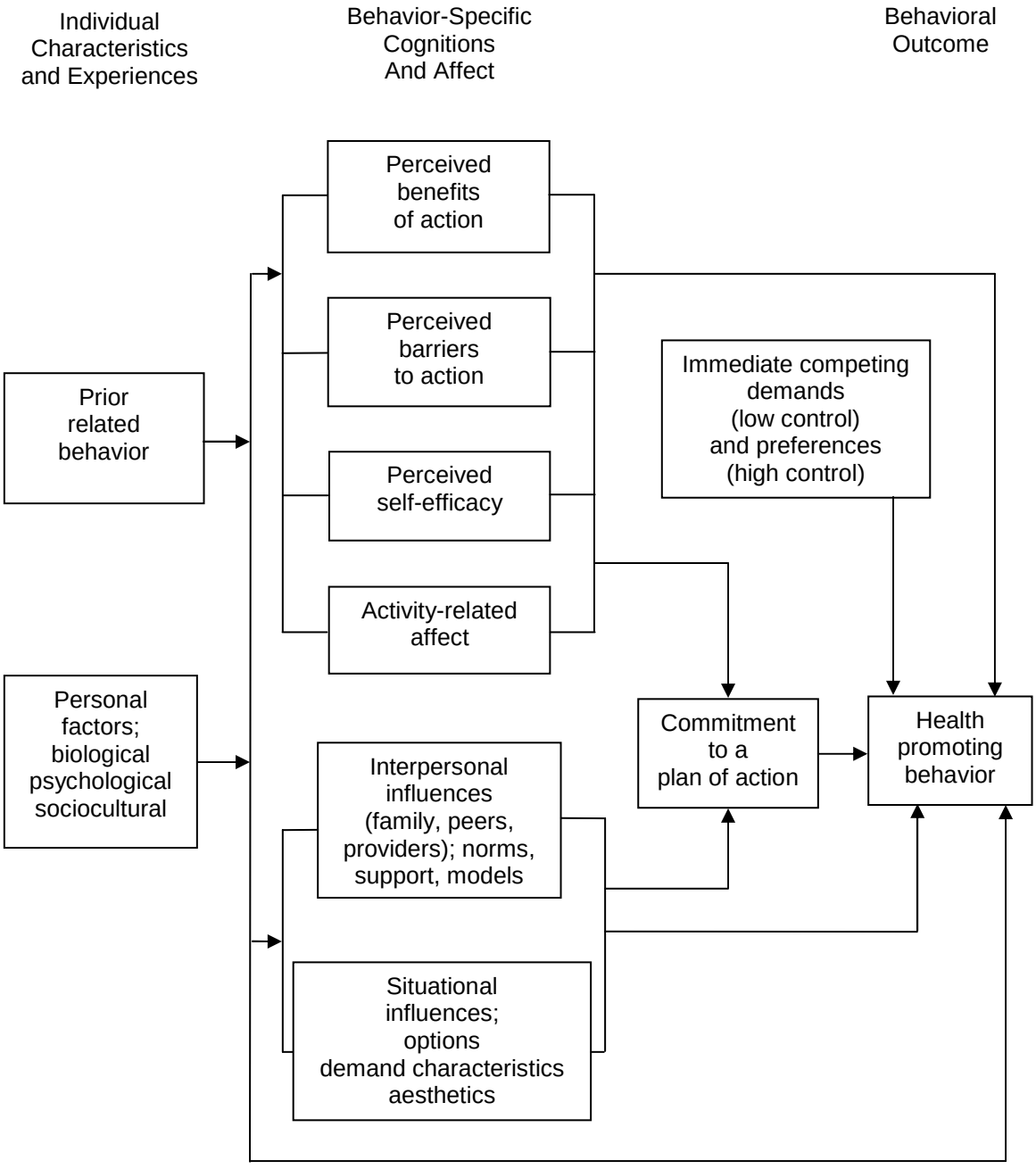
Although research has revealed mental and physical health problems of homeless persons, few researchers have identified the strengths of homeless women living in shelters (Montgomery, 1994; Thrasher & Mowbray, 1995) or have addressed the health promotion behaviors of this population, complicating efforts to plan nursing interventions. Of particular interest to this study is the research of Wilson (2005) who used a cross-sectional, descriptive study design to investigate health-promoting

behaviors of 137 sheltered homeless women in a specific Midwest location. Pender's revised Health Promotion Model (Pender et al., 2006) provided the nursing framework for the study. The findings of the study showed that sheltered homeless women participated in health-promoting behaviors in areas of health responsibility, spiritual growth, interpersonal relations, stress management, nutrition, and physical activity, but participated less in nutrition and physical activity. The study showed that sheltered homeless women make significant attempts to enhance their health (Wilson, 2005), and the findings provide direction for reduction of health disparities in areas of access to health care, health education, and policy changes to end chronic homelessness. Limitations of Wilson's study include concerns with internal and external validity, cross-sectional design in a single geographic area during summer months, the use of self-report for all instruments, and a moderate sample size. A qualitative, participatory action research study by Smith (2005) indicated that 21 women residing in a shelter identified exercise as their health-promoting need. The findings may be useful in the development of culturally sensitive exercise programs and education for women at this shelter. Although qualitative research provides rich information, Smith's study was limited in its generalizability.

Theoretical Framework

Pender's revised Health Promotion Model (HPM) is a nursing model that has been used since 1996 as a framework for research, exploring and explaining health-promoting lifestyle behaviors (Pender, 1996; see Figure 1). The model explores the

Figure 1. Pender's Revised Health Promotion Model



Source: Pender, Murdaugh, & Parsons, 2006, p. 50.

motivation for engaging in health-promoting behaviors by integrating a number of constructs from expectancy-value theory (Feather, 1982) and social cognitive theory (Bandura, 1986) within a nursing perspective of holistic human functioning (Pender et al., 2006). Expectancy-value theory infers that motivation is determined by how a person *values* the goal or outcome, and whether the person *expects* the goal or outcome (Feather, 1982). To achieve a successful behavioral outcome, the individual must believe the goal is valuable and attainable, have some prior knowledge of personal or reported successes in attaining the goal, and believe that specific actions will lead to similar or superior success (Pender et al., 2006). The HPM incorporates the self-efficacy construct from social cognitive theory (Bandura, 1997). Social cognitive theory acknowledges the dynamic interaction of the person, the behavior, and the environment in which a behavior or behavior change occurs (Baranowski, Perry, & Parcel, 2002). Although much of the environment may be beyond the individual's control (e.g., homelessness), the individual's perceived self-efficacy, or belief in his/her ability to perform the behavior(s), affects individual expectations for success. An individual's perceived self- efficacy can be more motivating than the objective truth of that person's ability to carry out the necessary action to produce a given health behavior outcome (Bandura, 1997). Pender et al. (2006) propose that individuals and groups develop lifestyle behaviors aimed at attaining life-enhancing behavioral outcomes, and not just the avoidance of illness. Pender's HPM illustrates the multidimensional quality of the interaction between the individual and the environment (interpersonal and physical) as health is pursued and achieved to each person's highest level (Pender et al., 2006). The model hypothesizes that performance of health behaviors can be achieved through direct and indirect effects

of personal, behavioral, and cognitive factors (see Figure 1). In the HPM, factors that influence participation in a health-promoting lifestyle are individual characteristics and experiences, behavior-specific cognitions, and behavioral outcomes (Pender et al., 2006). The model is used to explain and predict health-promotion behaviors.

The *individual characteristics and experiences* that affect subsequent actions include prior related behaviors (similar behavior in the past) and personal factors (biological, psychological, socio-cultural). Prior related behavior is proposed to influence behavioral outcome directly through habit formation and indirectly through behavior-specific cognitions and affect (perceptions of benefits, barriers, self-efficacy and activity-related affect). Research indicates that one of the best predictors of future behavior is the frequency of prior related behaviors (Pender et al., 2006). Personal factors are categorized as biological (age, gender, number of chronic conditions), psychological (definitions of health, self-efficacy, perceived health status, and perceived emotional, social, or psychological distress), and socio-cultural (race, ethnicity, education, marital status, and socioeconomic conditions), and may influence behavioral outcomes directly or indirectly through behavior-specific cognitions and affect (Pender et al., 2006). Some of these background factors are not modifiable or cannot be changed, thus attention directed at health-promoting behaviors are directed toward factors that can be modified or changed.

The *behavior-specific cognition and affect category*, which is a factor of major motivational significance and critical for nursing interventions, includes perceived benefits-barriers of action, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences (Arras, Ogletree, & Welshimer, 2006; Pender et al., 2006; Walker, Pullen, Hertzog, Boecker, & Hageman, 2006). Perceived benefits of

action or engagement in health-promoting behaviors are influenced by the value placed on the behavior by the individual. The individual must realize the anticipated positive benefits (intrinsic or extrinsic) of engaging in the behavior, either through prior direct experiences or through vicarious experiences of significant others. In addition, positive reinforcements are important motivators for behavioral change or outcome to continue (Pender et al., 2006). Perceived barriers to participating in a health-promoting behavior can be real or imagined. The barriers can be perceived as internal (e.g., lack of time, lack of knowledge, denial, anger, frustration) or external (e.g., cost, lack of access, lack of transportation) and are different for each individual (Chatterjee, Blakeley, & Barton, 2005; Timmerman, 2007). In Pender's (2006) revised HPM, benefits and barriers are modifying factors that directly affect behavioral outcomes or indirectly affect behavioral outcomes by reducing commitment to action.

Self-efficacy is the belief that one can successfully engage in an expected health behavior or "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Self-efficacy influences the decision to perform the behavior, the effort needed to perform the behavior, and the tenacity to perform the behavior when faced with difficulty (Becker et al., 1993; Callaghan, 2003; Pender et al., 2006). Self-efficacy also affects the body's physiological response to stress, including the immune system and production of naturally occurring painkillers (Bandura, 1997). Research indicates that self-efficacy is the strongest determinant of health-promoting behavior (Pender et al., 2006). Self-efficacy is proposed to have a direct effect on behavioral outcomes and an indirect effect through influencing perceived barriers and level of commitment to a plan of action. Perceived self-efficacy is proposed to be influenced by activity-related affect (Pender et

al., 2006). The activity-related affect or feeling state that occurs before, during, and after an activity influences whether or not the individual will participate in performing the behavior in the future. Positive activity-related affect increases perceptions of self-efficacy which in turn decreases the perception of barriers and increases a commitment to action. Positive feelings about the activity increase the likelihood that an individual will engage in the activity again. Conversely, negative activity-related affect decreases perceptions of self-efficacy, increases perceptions of barriers, and decreases commitment to a plan of action. Negative activity-related feelings will decrease the likelihood of the individual engaging in health-promoting behaviors. These factors (perceived barriers, perceived self-efficacy, activity-related affect) have a reciprocal effect.

Interpersonal influences are cognitions that are influenced by the behaviors, beliefs and/or attitudes of family, peers, and health care providers. The health beliefs and health practices of others significantly influence whether or not an individual will engage in or adhere to health-promoting behaviors. Interpersonal interactions with influential others support or discourage an individual's commitment to engage in health-promoting behaviors. Interpersonal influences are proposed to directly motivate behavioral outcomes or motivate behavioral outcomes indirectly through commitment to a plan of action (Pender et al., 2006).

Situational influences include perceptions and cognitions of the individual about options available, demand characteristics, and aesthetics of the environment that affects health-promoting behaviors (Pender et al., 2006). Environments (interpersonal and physical) or situational contexts that are perceived as supportive have a positive influence on the success of the behavioral outcomes. Situational influences directly

affect health behavioral outcomes or indirectly affect behavioral outcomes through commitment to a plan of action (Pender et al., 2006).

The *behavioral outcome* category includes commitment to a plan of action, immediate competing demands and preferences, and health-promoting behaviors directed to achieving positive health outcomes (Pender et al., 2006). Commitment to a plan of action is a cognitive process that includes what, when and how a behavior will be initiated. Strategies are developed by the individual, or others, to achieve desired behavioral outcome. Developing a workable plan increases the likelihood that the individual will initiate the intended health- promoting behaviors (Pender et al., 2006). Commitment to a plan of action directly affects behavioral outcomes (Pender et al., 2006). However, a commitment to a plan of action does not assure actions will be initiated by the individual.

Immediate competing demands or preferences may sidetrack an individual's plan of action for an intended behavior. Competing demands are unanticipated obstacles that the individual must deal with immediately such as work or childcare issues that the individual has little control over (Pender et al., 2006). Competing preference are desires or choices such as high-fat food instead of low-fat food choices that derail the intended health behavioral plan. The individual's strong commitment to the plan and strong self-regulation may override the competing demands and preferences and the intended behavior plan remains intact. Immediate competing demands and preferences have a direct effect on behavioral outcomes and moderate the effects of commitment (Pender et al., 2006).

Health-promoting behavior is the behavioral outcome that is motivated by the individual's decisions and behaviors to improve or promote health and well-being. It is

the proposed endpoint or action outcome in the HPM that results in improved health and quality of life at all stages of development (Pender et al., 2006). The HPM has been widely used as the theoretical framework for studies that examined health-promoting behaviors of diverse populations throughout the life span (Becker & Arnold, 2004; Pender et al., 2006; Pullen, Walker, & Fiandt., 2001; Srof & Velsor-Fredrich, 2006). However, there is limited documented research that used the HPM to examine health-promoting behaviors of homeless persons, especially homeless women living in shelters. Most models used in the study of health behaviors are relevant to illness preventing behaviors. Examples of these models include the Health Belief Model (Rosenstock, 1960) and Transtheoretical Model (Prochaska & DiClemente, 1983). In contrast to these health behavior models, Pender's (1996) HPM considers behaviors that lead to and maintains wellness. Thus, the HPM is most appropriate to use when examining the health promoting behaviors of sheltered homeless women.

Review of Research Using Pender's Health Promotion Model

Pender's HPM has provided the framework for more than 100 studies. There have been several integrative reviews conducted relevant to cardiovascular health promotion on health behaviors of children (Nicholson, 2000), adolescents' healthy behaviors (Srof & Velsor-Friedrich, 2006), childbirth education outcomes (Koehn, 2002), and health-promoting lifestyles of adults (Gillis, 1993) which have shown the HPM to be a useful framework for the study of lifestyle behaviors. The following review of recent research using Pender's HPM was examined for sample characteristics and settings, research design, measures, analyses, and results. Studies were selected from published reports between 2000 and 2008 to provide an overview of how the model has been used

to frame research. Inclusion criteria for the review were (a) published research using the HPM, (b) HPM measures, (c) judged to be high in research value, and (d) written in English. Exclusion criteria were dissertations, samples younger than 18 years old, and health promotion models other than Pender's HPM. A total of 16 research articles were selected that met the review criteria (see Table 1).

Sample Characteristics

Participants in the reviewed studies were adults aged 18 to 98 years. Sample sizes ranged from *n* = 36 (Carreno, Vyhmeister, Grau, & Ivanovic, 2006) to *n* = 641 (Arras, Ogletree, & Welshimer, 2006). Study samples (*n* = 16) included one study with males only (Arras et al., 2006), nine studies had both males and females (Bagwell & Bush, 2000; Becker & Arnold, 2004; Chilton, Hu, & Wallace, 2006; Easom & Quinn, 2006; Lee & Loke, 2005; McDonald & Wykle, 2003; Morowatisharifabad, Ghofranipour, Heidarnia, Ruchi, & Ehrampoush, 2006; Nelson & Luczon-Peterman, 2001; Ready, Naimark, Tate, & Boreskie, 2005). Six studies had females only (Adams, Bowden, Humphrey, & McAdams, 2000; Carreno et al., 2006; Pierce, 2005; Pullen et al., 2001; Walker et al., 2006; Wilson, 2005). Of the fourteen studies that reported race or ethnicity (88%), four studies (29%) specified race or ethnic group (Arras et al., 2006; Chilton et al., 2006; Lee & Loke, 2005; Ready et al., 2005). Eleven studies reported participants' education. The majority of studies (69%) reported that participants had attended some high school or more. Education ranged from one study that revealed 68% of their sample was illiterate (Ready et al., 2005) to another study revealing 100% of their participants had some college education (Lee & Loke, 2005). Eleven (69%) of the reviewed studies used convenience samples of clinic patients, university students, caregivers of the impaired elderly living at home, blue collar workers, parents of young soccer players and

Table 1

Research Using Pender's Health Promotion Model

Study	Sample	Research design	Measures	Analysis	Results
Adams et al. (2000) Social support and HPLP	F Rural *N* = 102 Age 19-86 88.2% W 59.1% employed 70.65 married 27.5% HS	Simple random sampling, descriptive correlational Power of .80	HPLP II, *α* = .95 total & (.73-.89) subscales Personal Resources Questionnaire (PRQ 85), *α* = .82 demographics	Descriptive statistics, correlations, multiple regression	SS and Ed (*r* = .27) HPLP and Ed (*r* = .29) HR and Ed (*r* = 22) PRQ 85 & HPLP II (*r* = .58) PRQ 85 & SG (*r* = .47) PRQ 85 & HR (*r* = .42) PRQ 85 & Nutrition (*r* = .40) PRQ 85 & PA (*r* = .26) PRQ 85 SM (*r* = .43) PRQ 85 & IR (*r* = .54) PRQ 85 & HPLP II (R^2 = .32) Race & HPLPII (R^2 = .40)
Arras et al. (2006)	M Middle age = 45-64 Older age= 65 *N*=191 95% ≥HS Mean age 66.1 Race not reported	Cross-sectional, quantitative 2 group = Sample size determined *a priori*	Benefits, barriers, SE, demographics, and HS. SRAHP = α =.94 total & .81-.92 subscales; BES α = .80 HPLP II α = .91 Barriers to HPB of Disabled Persons Scales (BHADPS) α =.82 total & .25-.59 subscales	Descriptive statistics, correlations, multiple regression	SE largest *M* score was HR; Smallest *M* score was PA All relationships were Sig. with strongest relationship between IR and SG (*r* = .76). Fewer HPB with lower income and education R^2=.66; age, income, education, health status, SE, and benefits and barriers Sig influenced HPB SE best predictor of N and PA.

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Bagwell & Bush (2000)	M & F Blue collar workers *N*=160 Age 18-65 Ed. < HS ->HS Race = "majority W	Descriptive, correlational	HPLP II α = .92 Laffrey's Health Conception Scale (LHCS) α = .84	*t*-test Correlations	F scored > M on HR & IR Older worker scored > than younger on N & E Younger worker scored > than older on PA. Sig. relationships between health concept and HPB Results suggest age, gender, & concept of health are important when planning health promotion programs. Finds suggest workers of different age, socioeconomics, and life experiences are included in planning phase of HP programs.
Becker & Arnold (2004)	M & F >18y o Age 18 – 92 F 64.9% *N*= 559 45% ≥ Hs 85.4% White	Descriptive/ Comparison of three groups (younger, middle, and older)	HPLP II α not specified	Descriptive statistics, Pearson correlation ANOVA	Older-age group (60-92) participated in N & HR & scored highest HPLP II total. Mean scores on HPLP II higher for older adults with SG the highest. PA lowest for older adults. Older & younger = highest scores on SM. Perceived health and HPLP II and subscales = Sig correlated on all scores Correlations ranged from .11 = HR to .31 for SG and .31 for total scale score, .29 = PA, .22 = N,0 .23 = IR, .26 = SM

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Carreno et al. (2006) Chile	F Age 20-45 *N*= 36 18 7-day Adventist (SDAW) 18 non-Adventist (NSDAW)	Comparative 6-month intervention pilot quasi-experimental study 2-group pre- post- test Random sample chosen from groups of 150 women each.	HPLP II Spanish version α =.93 total scale, α = .70 to .87 for subscales	Descriptive statistics, Sign test and Wilcoxon test.	Median scores Sig > between pre- & post-test in both groups for total score and six subscales. SDAW scores Sig higher scores than NSDAW except PA.
Chilton et al. (2006)	Hispanic F 55% *M* age = 32.2 *N*=40 80% married 76%< high school	Descriptive design Convenience sample	Demographics, HPLP II subscales HR PA & N (α = .72-.80) Diabetes Knowledge Questionnaire α = .87	Descriptive statistics Pearson correlation	*M* HR = 1.56 *M* PA = 1.56 *M* N + 1.95 *M* diabetes knowledge = 6.27 Low level health-promoting lifestyle and strong deficient in diabetes knowledge. Income is associated with PA (*r* = .30). age (*r* = .36) & education (*r* = .33) Sig related to diabetes knowledge

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Easom & Quinn (2006) (OTC drugs excluded)	Rural elderly M (9) & F (71) caregivers Age = 65-84 y o *N*=80 White 67.5 % Black 32.5% 91 % HS or > 43 % married	A descriptive, cross-sectional design Random sample Power .80	Home remedy use; Perceived Adequacy of Resources α = .87; Rand Health Survey (emotional health) α = .82; and Rand Health Survey (functional health) α = .89 & HP Activities for Older Adults α = .80; General Self-Efficacy Scale α = .85 Spiritual Perspective Scale (spirituality) α = .89;	Descriptive statistics Multiple regression (relations with HPB)	92% reported using home remedies. 99% used prayer, 26% used apple vinegar, 11% used honey, lemon, & whiskey, High levels of HPB except exercise Emotional health only Sig, (*b* = 0.17) & accounted for 19 % variance.
Lee & Loke (2005) (Hong Kong)	M & F students Age 18-25 *N*=247 F = 56.7% Ed. = college students.	Convenience sample, cross-sectional design	HPB (HR, PA, & N). Psychosocial well-being (SG, IR, SM) HPLPII (Chinese) α = .91 total α = .65-.82 subscales	Descriptive Chi-square (comparison of HPLP II between M & F) *t*-test (comparison of subscale score between F & M students)	Students had limited sense of HPB. Most did not practice HPB. NS difference between M & F on HR, SG, SM. IR, & N. M Sig > PA than F. F more capable than M to use IR & N but NS.

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
McDonald & Wykle (2003)	M & F care givers of impaired elderly living at home N= 176 Black n=66 White n=110 Ed. 56% some college	Longitudinal, comparison (3-year study, 3 time intervals) 2 group= AA & W Random digit dialing and snowballing Secondary data analysis	Health-Promoting Behaviors Questionnaire (r = .73, α not reported); CES-D depression α = .90; Langner Psychological Distress Scale, psychological distress, α = .62 to .83; health status; Caregiver Religiosity Questionnaire, religiosity α =.60; and number of chronic conditions.	Descriptive, t-test, ANOVA Multiple regression	W caregivers had Sig, higher number of HPB than AA. Age was the only predictor over time. Older caregivers had better HPB. No clinical depression found in either group At T3 W indicated higher perception on health At T2 religiosity higher of AA No Sig. difference in number of chronic conditions The adjusted R^2 indicated that age is the only sig, predictor of HPM across time. Psychological distress Sig. different at T1 &T2, Marital status and gender Sig. different at T1,
Morowatisharifabad et al. (2006) Iranian elders.	M & F > 65 y o living in their home in Iran *N*=102 M age 71 66% F, 68% illiterate 55% living with spouse	Ex-post facto Correlational design, Random sampling of cluster Power = .80 α = .05	HPLP II total and subscales (Persian) α = .88 total α =.60-.74 subscales SRAHP α = .91 Demographics	Descriptive statistics, Pearson correlation *t*-test ANOVA Multiple regression	Sig. relationship between SE and HPLPII total (*r* = .76) & subscales (*r* = .37-.70); SE accounts for 58% of the variance in HPB & could be used as a predictor of HPB; HPB are sig. related to Ed; SE related to gender, marital status, & education.

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Nelson & Luczon-Peterman (2001)	M & F parents of young soccer players (*N*= 56) *M* age 41.68 73% F 92% W 100 % ≥ HS	Descriptive Convenience sample New instrument (7questions), no alpha, no power reported	Demographics, professional influence, & sun protection knowledge and behaviors of parents.	Descriptive statistics, X^2	Sig. positive relationship between F parent and examination of children. Sig. relationship between history of melanoma or skin cancer and protective clothing. Sig. relationship between HCP educating patients and the use of sun protection and self-examination of skin.
Pierce (2005)	F Older rural F with heart failure *N*= 45 Age 65-98 White = 100% 48% widowed 42.25% married	Descriptive, correlational design, convenience sample, Power .95 α = .05, ES .35	Socioecological factors (social support, barriers to HPB, perceived health status) & heart failure. HPLP II α = .91 Barriers to HPB of Disabled Persons Scales (BHADPS) α = .82 (.25-.59) Personal Resources Questionnaire 85 (PRQ58) α = . 87-.90 (HPLPII, PRQ85, 1 question = health status	Pearson correlation Multiple regression	HPLP II *M* = 142.07 Diabetes (*r* = .43) & NY heart classification (*r* = -.28) Sig predictors of HPB. NYHC & diabetes Sig. predictor of HPB (R^2 =.33). Barriers were not Sig. in predicting HPB. SS, barriers, perceived health status, NS predictor of variance in HPB,

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Pullen et al. (2001)	F rural *N*= 102 *M* Age = 74.2 55% not married 89%≥ high school 100 % W non-Hispanic All had insurance	Descriptive Correlational	HPLP II Changes in # of HPB past year (N,PA,SM,IR,SG) Health information, Definition of health= Laffrey Health Conception Scale (LHCS) α = .93 for wellness scale & .84 for clinical scale Perceived health status = Medical Outcomes Study (MOS) α = .79 for physical functioning and .81 for mental health	Descriptive Multiple regression Hierarchal regression = personal, contextual, & health-promoting lifestyle	N = (*M* = 3.21) highest score, PA = (*M*= 2.18) lowest score. Both person and contextual influences are determinants of HPB. Determinants of HPB R^2 = .419. Determinants of HPB change attempts R^2 = .183. Determinants of PA R^2 = .229. Determinants of N R^2 = .128. Determinants of SM R^2 = .315. Personal influences more Sig in making changes in HPB.
Ready et al. (2005)	M & F > 18 y o *N*=538 Members *n*=236 Nonmembers *n*=302 Race not reported Ed. = Members 96% ≥ HS, Non-members 95%	Cross-sectional, stratified sample 2 group = fitness center members and non members	Health status (Manitoba Study of Health and Aging (MSHA) & Seven Oaks General Hospital Feasibility Study; (Health-Specific Locus of Control (HLOC)health beliefs, and health behaviors HPLPII α not reported	X^2 *t*-test Multiple regression	Fitness members Sig, older than non fitness members (X^2 , 3 *df*=13.4); Sig. difference in health status and use of health care services of members & non-members (X^2 , 3 *df*=13.4) Fitness members scored Sig. higher on total HPLP II (*B*= .22) as well as HR (*B*=.30), PA (*B*=.71), N (*B*=.33); Sig. more likely to engage in preventive care and physical fitness higher than non-member. They were also more likely to engage in health-promoting behaviors.

Table 1 (continued).

Study	Sample	Research design	Measures	Analysis	Results
Walker et al. (2006)	F rural *N*=179 Age 50-69 White = 98.4% Married = 71.9% ≥high school 96%	Descriptive correlational design	PA = 7-Day Activity Recall) Healthy eating (1998 Block Health Habit and History Questionnaire; Behavior-specific influences (SE, benefits, barriers, and family and peer support) ;PA (Exercise Benefits α =.95 & Barrier α =.80) ; Diet (Healthy Eating Benefits and Barriers α =.80; SE for Exercise Habits α =.90; SE for Eating Habit α =.91) Family Support for Exercise Habits α =.90 ; Friend Support for Exercise α =.91; Family Support for Healthy Eating α =.84; Friend Support for Healthy Eating α =.84	Descriptive Multiple regression including canonical correlation	PA = low, cardio respiratory fitness below average, Healthy eating habits= whole grain and dairy servings below recommended daily intake. Scores varied within the sample. PA R^2 = 21.7 N R^2 = 22.5 SE, benefits, barriers, and IR were Sig influence of HPB

Table 1 (continued)

Study	Sample	Research design	Measures	Analysis	Results
Wilson (2005)	Sheltered homeless F (*N*=137) Age 18-60 M 36 53% W 44% B 44% never married 78% ≥ HS 80 % unemployed	Cross-sectional, descriptive Power .80, ES = .40	Health practices HPLP II α =.95 total α =.75-.88 subscales HS	Descriptive statistics, Pearson correlation	HS **negatively** correlated with HPLP II (*r*= -.22, Sig), N (*r* = -.21, Sig), SG (*r* = -.21. Sig), and SM (*r*= -.25, Sig). SG and IR strongest predictors of HPB.

Note. ANOVA = analysis of variance, BES = benefits of exercise & healthy eating, Ed= levels of education, ES = effect size, F = female; HCP = health care professionals; HPB = health-promoting behaviors; HPLPII = Health-promoting Lifestyle Profile II total score; HR = HPLPII health responsibility subscale; HX = history; IR = HPLPII interpersonal relation subscale; HS = health status; M = male; N = HPLPII nutrition subscale; NS = nonsignificant; NY = New York; SE = self-efficacy; Sig = significant; SG = HPLPII spiritual growth subscale; SM = HPLPII stress management subscale; SS = social support, SSDI = Social Security Disability Insurance.

parents of farm children, homeless women, women with specific religious affiliation, elderly women living in rural and urban areas, and fitness club members. Five studies (31%) used random sampling to obtain their participants (Adams et al., 2000; Arras, et al., 2006; Carreno et al., 2006; Easom & Quinn, 2006; Morowatisharifabad et al., 2006).

Research designs

The majority (*n* = 12, 77%) of the studies used descriptive, cross-sectional, correlational designs (Table 1; Adams et al., 2000; Arras et al., 2006; Bagwell & Bush, 2000; Chilton et al., 2006; Easom & Quinn, 2006; Lee & Loke, 2005; Morowatisharifabad et al., 2006; Nelson & Luczon-Peterman, 2001; Pierce, 2005; Pullen et al., 2001; Walker et al., 2006; Wilson, 2005). A comparative approach applying either a 2-group or a 3-group design was used in four studies. Researchers in an experimental study used a random sample, pre-post test design to compare the difference in nutritional changes between two groups that received different interventions (Carreno et al., 2006). Both groups showed significant improvement during pre-post test intervals. In a second study, Becker and Arnold (2004) used a descriptive design to compare levels of physical activity and health status, health behaviors, and health beliefs of three different age groups (young, middle, old) relative to health-promoting behaviors. The third study was a 3-year longitudinal design with three time intervals and a 2-group comparison of the number of health-promoting behaviors of caregivers of the elderly living at home (McDonald & Wykle, 2003). A fourth study was a cross-sectional, stratified sample 2-group design to compare health status, health beliefs, and health behaviors of fitness center members and non members (Ready et al., 2005). Nonprobability or convenience sampling was most frequently used for sample selection.

Measurement of health promotion behaviors

Some measures have been developed for specific use with the HPM. For example, Walker and her colleagues (1987) developed the Health-promoting Lifestyle Profile (HPLP I) and a revised HPLP II (Walker & Hill-Polerecky, 1996) to measure health-promoting behaviors, which is the behavioral outcome of Pender's HPM. The Self-Rated Abilities for Health Practices (SRAHP) was developed by Becker et al. (1993) to measure health self-efficacy. Other measures used in the reviewed studies were not developed specifically for the constructs in the HPM. The measures from the reviewed research will be discussed in the next paragraphs.

Individual characteristics and experiences. Individual characteristics and experiences primarily included demographic data (age, race, gender, marital status, educational attainment, employment status, and insurance) in all of the reviewed studies. These measures were developed by the investigators and not standardized. Bagwell and Bush (2000) and Pullen et al. (2001) included Laffrey's Health Conception Scale (Laffrey, 1986) to determine study participants' definition and meaning of health. The wellness definition of health, which was a combination of eudemonistic, functional, and adaptive definitions, were significantly related to health-promoting life style behaviors. Chilton et al. (2006), in a study of diabetes knowledge in Hispanic American adults, included knowledge of diabetes as a cognitive perceptual factor. Although age and education were significantly associated with diabetes knowledge, the researchers did not examine the relationship of knowledge with health responsibility, physical activity, or nutrition. Thus, it seems more appropriate to view knowledge as an individual characteristic or experience, because knowledge can affect health-promoting behaviors. Ready et al. (2005) examined health locus of control as an individual characteristic of

adults who were members and non-members of a health fitness center. Results revealed a significant difference in health status and preventive care of members versus non-members. Additionally, members scored higher on the HPLP II total, Health Responsibility, Physical Activity and Nutrition HPLP II subscales than did non-members. Health locus of control was not significantly related to scores on the HPLP II.

Behavior-specific cognitions and affect. Behavior-specific cognitions and affect includes the following concepts: benefits, barriers, self-efficacy, activity-related affect, interpersonal influences, and situational influences of health-promoting behavior. Benefits were measured by a benefit of exercise and eating scale (Walker et al., 2006). A Cronbach's alpha has been reported for the Barrier to Health-promoting Activities for Disabled Persons (α = .82) (Arras et al., 2006; Pierce 2005) and the Perceived Adequacy of Resources (α = .87) (Easom & Quinn, 2006).

The Self-rated Abilities for Health Practices (SRAHP) questionnaire, developed by Becker et al. (1993), was used in two studies to assess health self-efficacy regarding exercise, nutrition, well-being, and general health practices specific to health-promoting-behaviors (Arras et al., 2006; Morowatisharifabad et al., 2006). The scale was shown to be reliable with Cronbach's alpha coefficients of .94 for the total scale and .81 to .92 for the various subscales (nutrition, psychological well-being, exercise, and health practices; Becker et al., 1993). Self-efficacy was also measured using the Self-efficacy for Healthy Eating Habits and Self-efficacy for Healthy Exercise Habits scales (Walker et al., 2006). Both scales had acceptable Cronbach's alpha reliabilities (see Table 1). Easom and Quinn (2006) used the General Self-efficacy Scale that also had acceptable internal consistency reliability.

Interpersonal influence measures included a measure of social support (Adams et al., 2000) and caregiver support (Easom & Quinn, 2006), and situational influence measures included church and spirituality support (Carreno et al., 2006; Easom & Quinn, 2006). Lee and Loke (2005) examined spiritual growth, interpersonal relationships, and stress management. Family Support for Exercise Habit Scale (α = .90), Friend Support for Exercise Habits Scale (α = .91). Family Support for Healthy Eating Habit Scale (α = .84), and Friend Support for Eating Healthy Habit Scale (α = .84) were used by Walker et al. (2006) to measure social support. Neither the activity-specific nor eating specific scales correlated significantly with a general social support measures. None of the researchers in any of the studies measured activity-related affect.

A variety of other instruments that targeted specific factors were reported in the studies. For example, The Personal Resources Questionnaire (PRQ 85) was used in two studies to examine social support (Adams et al., 2000; Pierce, 2005). Adams et al. (2000) used PRQ 85, a 25-item scale consisting of life situations and five dimensions of intimacy, assistance, social integration, affirmation of worth, and nurturance. They found that Cronbach's alpha for the scales ranged from .73 to .89 for the subscales and .95 for the total. Correlations between the PRQ 85 total and subscale and the HPLP II were all significant, and social support was found to be a strong predictor of whether an individual engaged in health promotion. Pierce (2005) used the PRQ 85 to examine health-promoting behaviors of rural older women with heart failure and did not find that social support was significantly related to the women's health-promoting behaviors.

Behavioral outcomes. Of the 16 studies reviewed, 11 (69%) employed the revised HPLP II or subscales of the instrument to measure behavioral outcomes. The HPLP II measures the degree of engagement in health promotion behaviors regarding

spiritual growth, health responsibility, physical activity, nutrition, interpersonal relations and stress management aimed at decreasing the impact of illness and promotes wellness. Four reviewed studies employed translated versions of the HPLP II: Spanish version for Carreno et al. (2006) & Chilton et al. (2006) studies, Persian version for Morowatisharifabad et al. (2006) study, and Chinese for Lee & Loke, (2005). Cronbach's alpha for the total scale was .94 and ranged from .79 to .87 for the subscales (Walker, Sechrist, & Pender, 1987). Nine (82%) of the 11 studies reported Cronbach's alpha coefficients. Cronbach's alpha scores of .70 indicate an acceptable reliability and scores of .80 or higher indicate a good reliability (Gliner & Morgan, 2000). The largest Cronbach's alpha coefficients reported for the total scale was .95 and alpha for the subscales were from .75 to .88 by Wilson (2005) for a sample of 104 homeless women living in shelter. The smallest Cronbach's alpha coefficients reported were .88 for total scale score and .60 to .74 for subscales scores in a study of 102 elderly Iranian women of which 68% were reported to be illiterate (Morowatisharifabad et al., 2006). The low scores may be related to the HPLPII being translated to a different language (Persian) and/or the reported low literacy that could affect interpretation of the meaning of words.

Easom and Quinn (2006) used a 44-item Health Promotion Activities for Older Adults Measures (Padula, 1997) to assess health promotion activities. This scale has a total score and scores for the 5 subscales—Collaborative Health Management/Injury Prevention, Stress Reduction/Rest and Relaxation, Exercise, Substance Abuse Prevention and Nutrition) relevant to older adults. Construct validity was established through factor analysis that demonstrated support for the five subscales. Cronbach's alpha for the total scale was good (α = .80; Easom & Quinn, 2006).

McDonald and Wykle (2003) measured health-promoting behaviors with a modified version of the Health Practice Index developed by Belloc and Breslow (1972) and modified for use in this study as the Health-promoting Behavior Questionnaire. The questionnaire identifies seven health practices: 1) usual hours of sleep 7 or 8 hours at night; 2) eat breakfast almost every day; 3) eat between meals rarely or never; 4) drink not more than two drinks at one time period; 5) not smoke cigarettes; 6) often or sometimes engage in active sports, swim or take long walks, or often garden or do physical exercises; and 7) not been told he/she is overweight. Brelloc and Breslow (1972) reported that the Index has acceptable reliability (α = .71), but no reliability testing was done for the modified version (McDonald & Wykle, 2003).

Analyses

Descriptive statistics (means, ranges, percentages, standard deviations) were used to analyze demographic data in all of the studies reviewed (Table 1). Bivariate analytic methods included Pearson Product Moment Correlation Coefficient (Pearson's *r*) to examine relationships (*n* = 8). All of the studies examined the relationship among study variables and health-promoting behaviors within the context of Pender's Health Promotion Model. Other researchers used *t*-tests to examine mean differences such as the difference between older and younger blue-collar workers' health promotion behaviors (Bagwell & Bush, 2000), males' and females' health-promoting behaviors (Lee & Loke, 2005; McDonald & Wykle, 2003), and between gender, age, marital status, and education (Morowatisharifabad et al., 2006), and members and nonmembers of physical fitness clubs (Ready et al., 2005). Chi-square (X^2) was used in a study of parents of soccer players to determine if a relationship existed between demographic characteristics (age, gender, education, and ethnicity) and parental behaviors and

knowledge regarding sun protection (Nelson & Luczon-Peterman, 2001). Ready et al. (2005) used X^2 to examine health status of members and nonmembers of a fitness club, and Wilson (2005) used X^2 to examine differences in health-promoting behaviors among homeless women living in five shelters. Multivariate methods were most commonly used and included Analysis of Variance (ANOVA) (n = 3) and multiple regression (n = 9). All studies using multivariate methods examined the relationship among Pender's Health Promotion Model, with health-promoting behaviors as the outcome variable.

Results

Study results are summarized by Individual Characteristics and Experiences and health-promoting behaviors, Behavior Specific Cognitions and health-promoting behaviors, and the relationships among the subscales of the HPLP II. The reviewed research has revealed a moderate relationship between social support and the HPLP II and small to moderate relationships between social support and the subscales of the HPLP II (Adams et al., 2000). They reported that social support explained 32% of the variance in health-promoting behaviors and race explained 40% of the variance in health-promoting behaviors. Conversely, social support, rating of health and barriers to HPB were not found to be significant predictors of variance in health promotion behaviors of rural women with heart failure (Pierce, 2005). Arras et al. (2006) found that age, income, education, health status, self-efficacy and benefits and barriers explained 66% of the variance in health-promoting behaviors. Lower income and lower education of middle-aged and older men were positively associated with lower scores on the HPLP II. Bagwell and Bush (2000) found that older workers scored higher on the health responsibilities and interpersonal support. No difference was found between men and women in overall HPLP II score. Men and women differed on exercise and nutrition

subscales, and younger workers scored higher on the physical activity subscale than older workers. Becker & Arnold (2004) also found that older workers scored higher on nutrition and health responsibilities, and spiritual growth and health responsibilities were significantly correlated with the HPLP II. Pullen et al. (2001) found women scored highest on nutrition and lowest on physical activity. In addition, personal influences accounted for 31% of the variance in health-promoting lifestyle and contextual influences accounted for an additional 16% of the variance for a cumulative total of 47% of the variance in health-promoting lifestyle. The strongest influences on health-promoting lifestyle behaviors were wellness definition of health (B = .37) and source of health information (B = .32). Personal influences explained most of the variance for each dimension of overall health-promoting life-style, physical activity, nutrition and stress-management (Pullen et al., 2001). Combined personal and contextual influences made significant contributions to the variance of each of the health-promoting lifestyle behaviors: 12.8%, 18.3%, 22.9%, 31.5%, and 41.9% for nutrition behavior, change attempts in the past year, physical activity behavior, stress management, and overall health-promoting lifestyle, respectively, as indicated by the adjusted R^2 scores. Morowatisharifabad et al. (2006) found that level of education was the only statistically significant demographic factor in relations to health promotion behaviors of older adults in Iran. They reported that gender, marital status, and level of education were found to be statistically significant factors in relation to self-efficacy.

Researchers in two studies examined health-promoting behaviors of caregivers of people living at home. Easom and Quinn (2006) found that the rural elderly caregiver used folk home remedies (99% used prayer, 26% used apple cider, 11% used honey, lemon, and whiskey, 6% used wild garlic, 4% used yellow root, and 1% used horse

liniment) and participated in health promotion activities except for exercise. Emotional health was the sole significant predictor of health promotion activities and explained 19% of the variance in health promotion activities. McDonald and Wykle (2003), with a 3-year longitudinal comparison study, found that the number of health-promoting behaviors significantly differed between Black and White caregivers at all three time intervals with Whites reporting a higher number of health-promoting behaviors than Blacks. Perceived health status was significantly different at Time3 with Whites having a higher perception of health than Blacks. At Time2, the Black caregivers reported significantly higher religious beliefs and practices than White caregivers. Age was the only caregiver characteristic that significantly differed over time when race and subject characteristics were examined. However, it was reported that both racial groups who were 65 and older participated in a higher number of health-promoting behaviors than the younger age groups. Black women were more likely than Black men to participate in health-promoting behaviors. Regression of change on caregiver health-promoting behaviors showed that the predictor of change was significantly different at Time1 - Time2 for psychological distress for White caregivers. For Black caregivers, three predictor variables, (current marital status at Time2 - Time3, current family income at Time2 - Time3, and change in perceived health at Time1 - Time2) were significantly different.

Other researchers compared health promotion behaviors of different groups. For example, Lee and Loke (2005) compared health promotion behaviors of male and female students at a Hong Kong University and found that most students did not practice health-promoting behaviors. Although there was no statistically significant difference found in health-promoting behaviors (health responsibility, spiritual growth, stress management, interpersonal relations, and nutrition) between the groups, male students

participated more in physical activity and stress management activities than female students. Female students scored slightly higher on interpersonal relationships and nutrition than male students. Nelson & Luczon-Peterman (2001) found that female respondents were more responsive to sun protection than males. A family history of melanoma or other skin cancers significantly correlates with the use of sun protection. The results also showed a positive relationship between advice from health care providers and parental behaviors about sun protection and skin self-examination.

Ready et al. (2005) compared fitness center members to non-members and found that fitness center members were significantly older than non-members. They found that there were no significant differences in marital status, income, or education attainment between the two groups. Fitness members were more likely to engage in preventive care activities (visits to general physician, dentist, therapist, optometrist or nutritionist in the past year). Eighty-eight percent of fitness reported exercising regular as compared to 54% of non-members. After adjustment for demographic variables and physical activity, fitness centre members scored significantly higher on the overall HPLP II score and scored significantly higher on health responsibility, exercise, and nutrition than non-members. The improved health-promoting behaviors of fitness centre members may lead to reduced health care cost.

Other researchers focused on behavioral cognitions and affect and health-promoting behaviors. For example, Morowatisharifabad et al. (2006) used Pearson's correlation coefficient to examine the relationship between self-efficacy and health promotion behaviors, and the findings revealed a statistically significant relationship between self-efficacy and the overall score (r = .78) and subscale scores (r = .37 to r =

.70) of the HPLP II of older adults. Self-efficacy alone explained 58% of the variance in health promotion behaviors.

Pierce (2005) found that a history of diabetes and the New York Heart Classification level predicted 33% of the variance in health promotion behaviors. Contrary to the findings of other studies, social support, rating of health, and barriers to health promotion behaviors were not found to be significant predictors of variance in health promotion behaviors of rural women with heart failure (Pierce, 2005).

Walker et al. (2006) examined the relationship of cognitive-perceptual determinants (perceived self-efficacy, benefits, barriers, and family and peer support) from the Health Promotion Model to explain both physical activity and healthy eating behaviors among rural women aged 50 to 69 in the same sample. A pair of canonical variates (determinants and markers) for physical activity and healthy eating was interpreted, explaining 21.7% and 22.5%, respectively of the variance in healthy lifestyle behavior changes.

Wilson (2005) found that homeless women living in shelters practiced health promotion behaviors in all areas (health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, stress management and overall health promotion behaviors) but scored the lowest on nutrition and physical activity. Reported health status had an inverse effect on HPLP II scores. As the number of physical illnesses increased the scores for the HPLP II decreased. Homeless women scored highest on spiritual growth and interpersonal relations.

Summary

Pender's Health Promotion Model is an appropriate model to use as the framework to examine health-promoting behaviors of adults in diverse settings, of

diverse ages, and cultures. Individual characteristics such as age, socioeconomic, and life experiences are important to health-promoting behaviors, and there may be racial, socioeconomic, and gender differences in the practice of health-promoting behaviors. Behavior-specific cognitions and affect was found to influence health-promoting behaviors in some groups but not in other groups. Barriers were viewed as a problem to health promotion in younger and middle aged persons but not in older persons. Self-efficacy and social support were found to have a strong association with health-promoting behaviors. Only one study was found that examined health-promoting behaviors of sheltered homeless women, and that study only described health-promoting behaviors of the women and examined sociodemographic and health related activities in relation to health-promoting behaviors. The proposed study will add additional knowledge about sheltered women by examining the relationship of additional HPM constructs (e.g., self-efficacy, mental health status) and health-promoting behaviors.

CHAPTER III

METHOD

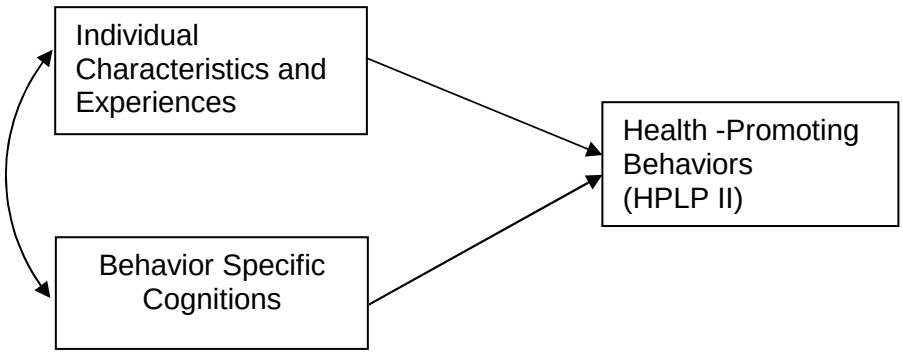
Research Design

A cross-sectional, correlational design was used to describe individual characteristics and experiences, behavior specific cognitions, and health-promoting behaviors of sheltered homeless women in central North Carolina and the relationship between selected variables (i.e., relationship between individual characteristics and experiences and health-promoting behaviors and self-efficacy and health-promoting behaviors) in this population.

Figure 2 depicts the model for the study. The independent variables addressing the construct of Individual Characteristics and Experiences were location of usual health care, preventive health care, tobacco use, age, physical health, perceived health status, mental health, race/ethnicity, marital status, education, number of children, employment status, and health care coverage. The independent variables addressing the construct of Behavior-specific Cognitions were social and emotional support, homeless history, veteran status, perceived barriers to health care, and perceived self-efficacy. The dependent variable was health-promoting behaviors. Health-promoting behaviors were defined as a measure of a positive state in regard to health responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships and stress management that was measured by the Health-Promoting Lifestyle Profile II (Walker & Hill-Polerecky, 1996). Homelessness was defined as a lack of a fixed, regular, and adequate nighttime residence (McKinney Act, 1987). Homelessness was operationalized to mean staying

overnight in a shelter for homeless women. Perceived self-efficacy was defined as a measure in one's belief in the ability to perform various health practices within the context of one's lifestyle that was measured by the Self-Rated Abilities for Health Practices (SRAHP) scale (Becker et al., 1993). Personal health data including health status, location of health care providers, barriers to healthcare, physical diseases, and days of mental distress were measured using a Personal Health Form adapted from the *Behavioral Risk Factors Surveillance Survey* (Center for Disease Control and Prevention, 2006). In addition to the quantitative measures of variables, a qualitative question "What things get in the way or stop you from taking part in health promoting behaviors" was asked.

Figure 2. Study's Conceptual Model



With the increase in homelessness and the disparities that accompany homelessness, recognizing and capitalizing on the health promotion behaviors of sheltered homeless women is paramount to improving the quality of life for this unique population. Therefore, this study identified the relationships among individual characteristics and experiences, behavior specific cognitions, and health promoting

behaviors of sheltered homeless women as a first step to developing policies or interventions needed to promote health and prevent illness.

Study Setting

Data were collected in two urban areas in central North Carolina. Due to inaccessibility of participants in other settings (e.g., living on the street, in cars, with friends or family members), three shelters that provide temporary housing for homeless women were identified as study sites. The shelters are non-profit organizations that receive funding from many sources, including governmental grants, individual donations, fund raising events, foundations, business/religious organizations, and volunteer contributions (monetary and in-kind donations). Services vary among the three shelters but all provide food, clothing, shelter, and safety for homeless women.

Shelter #1 has been open for approximately three years. It provides a combination of emergency and residential shelter for up to 91 homeless women who want to participate in substance abuse (drugs and alcohol) treatment. The facility provides detoxification and treatment of substance abuse for homeless women who spend the night in the facility. The program also offers on site medical care, case management, education/job training, classes focused on daily living skills, personal growth programs, and parenting skills (Healing Place for Women and Children of Wake County, 2008). The program is based on Alcoholics Anonymous principles (Alcoholics Anonymous, 2008) and the belief in a power higher than self. It is not a religious based facility.

Shelter #2 provides day shelter for the past 25 years for homeless women with children and single women who are escaping domestic violence. However, shelter #2

does not provide overnight shelter care or support. The women who attend the day shelter at the Women's Center stay overnight at the Raleigh Rescue Mission or the Helen Wright Center. The Women's Center provides many social services and support such as case management, financial assistance, free HIV testing and counseling, supportive employment, and crisis counseling. Off-campus and referral services for medical care are available for clients staying at shelter #2 because there is no on-site medical care. (The Women's Center of Wake County, 2006).

Shelter #3 is a 200–bed facility that provides overnight emergency shelter for homeless women with children and women fleeing domestic violence and provides an on-site medical clinic (Salvation Army of Greater Charlotte, 2007). The Salvation Army shelter is a private, non-profit Protestant denomination facility and is both a church organization and a social services organization. The primary goal of the facility is to feed and shelter homeless women and their children. The shelter provides services for women of all denominations and does not require the women to attend worship services or be a Protestant in order to receive services.

Ballard (2008) conducted a pilot study to assess the availability of an adequate number of participants for the sample for this study and found that an adequate sample was obtained during the one-month period when data were collected (see supporting letters). Approval from the University of North Carolina at Greensboro Institutional Review Board (IRB) was obtained prior to conducting the pilot study.

Sample and Sampling Plan

Recruitment for this study of health-promoting behaviors of sheltered women involved convenience sampling.

The criteria for inclusion in the study were homeless women who:

1. resided in homeless shelters in Wake and Mecklenburg Counties the night prior to data collection
2. were age18 or older
3. understood and spoke English
4. signed a consent form for this study.

The criteria for exclusion from the study were women who:

1. did not stay in a homeless shelter the night prior to data collection
2. were cognitively impaired (unable to state time, place, or name)
3. had previously completed the questionnaires for this study

Statistical Power

With an alpha level of .05, using a two-tailed test, power of .80 (the conventional standard), and an estimated population correlation coefficient or effect size of 0.30 [the strength of the relationship between an independent variable and a dependent variable (Pearson's $r = 0.30$)] an approximate sample size of 88 women was needed (Polit, 1996) to detect if a significant relationship exists (statistically significant correlation) between the variables sociodemographic characteristics and personal factors (age, martial status, education, employment status, number of children, race/ethnicity, healthcare access) and total and specific health-promoting behaviors (healthy eating, exercise, stress management, interpersonal relations, health responsibility, and spiritual growth). The final sample of 126 women was adequate to detect a significant relationship of 0.30 between key variables. Measurement attrition was minimized for this study because the design asked the participant to complete the questionnaires at one sitting. No

questionnaire was unusable due to missing data or the participant leaving before completion of the questionnaire.

Instruments

The questionnaire used in this study contained 3 instruments: *Personal Health Form* adapted from the *Behavioral Risk Factors Surveillance Survey* (Center for Disease Control and Prevention, 2006), *Self-Rated Abilities for Health Practices Scale* (Becker et al., 1993) and *Health-Promoting Lifestyle Profile II* (HTLP II), (Walker & Hill-Polerecky, 1996). Table 2 presents a match between the concepts and measures. The questionnaire is located in Appendix A. Approval for the use of the HPLP II, SRAHP, and adaptation of PHF was obtained for this study (see Appendix A).

Personal History Form

The *Personal History Form* (PHF) was adapted from the *Behavioral Risk Factors Surveillance Survey* [North Carolina State Center for Health Statistics (NCSCHS), 2007]. Items included were based on an extensive literature review of studies of homeless people. The PHF collects and measures data for individual characteristics and experiences that are organized into three categories: demographics, health access, and homeless history. The concept individual characteristics and experiences include the following variables: race/ethnicity, marital status, employment, age, education, and number of children. Individual characteristics and experiences data were reported as totals, frequencies, and percentages for each dimension. Personal health data [location of health care provider, reported health status, time of last preventive health care visit (mammogram, Pap smear, medical, dental, vision), barriers to health care, identification of specific physical and mental health conditions, tobacco use, homeless history,

Table 2

Association Between Elements of the Model, Sample Characteristics, Study Variables, Questionnaire and Item Number, and Level of Measurement

Elements of the Model	Study Variables	Questionnaire & Item Number	Level of Measurement
Individual Characteristics and Experiences			
Prior related behaviors	Location of usual health care	PHF: 8 c	Nominal
	Preventive health care	PHF: 8 d, e	Ordinal
	Tobacco use	PHF: 11 a, b, c	Nominal (b, c), ordinal (a)
Personal factors			
Biological	Age,	PHF: 1	Nominal
	Physical health (perceived health status	PHF: 7, 9	Ordinal

Table 2 (continued).

Elements of the Model	Study Variables	Questionnaire & Item Number	Level of Measurement
Psychosocial	Mental health	PHF 10 a, b	Scale
Socio-cultural	Race/ethnicity,	PHF: 2 a, b	Nominal
	Marital status,	PHF: 3	Nominal
	Education,	PHF: 4	Nominal
	Number of children,	PHF: 5 a, b,	Scale
	Employment status,	PHF: 6 a, b	Nominal
	Health care coverage	PHF: 8 a, b	Nominal
Behavior-specific cognition			
Interpersonal influences	Social and emotional	PHF: 13	Ordinal
Family, peers, &	support		
providers			
Situational influences	Homeless history	PHF: 12 a, b, c, d, e	Nominal
	Veteran Status	PHF: 14	Nominal

Table 2 (continued).

Elements of the Model	Study Variables	Questionnaire & Item Number	Level of Measurement
Behavior-Specific Cognition			
Perceived barriers to actions	Barriers to health care	PHF 8 f	Scale
Perceived self-efficacy	Self-efficacy	SRAHP Total Scale 1-28	Scale
		Exercise	Scale
		4, 15, 16, 17, 18, 19, 20 21	
		Psychological Well-being	Scale
		8, 9, 10, 11, 12, 13, 14	
		Nutrition	Scale
		1, 2, 3, 5, 6, 7	
		Responsible Health Practices	Scale
		22, 23, 24, 25, 26, 27, 28	

Table 2 (continued).

Elements of the Model	Study Variables	Questionnaire & Item Number	Level of Measurement
Behavioral Outcome			
Health promotion behavior	Health-promoting behaviors	HPLP II Total Scale 1-52	Scale
		Health Responsibilities 3, 9, 15, 21, 27, 33, 39, 45, 51	Scale
		Physical Activity, 4, 10, 16, 22, 28, 34, 40, 46	Scale
		Nutrition 2, 8, 14, 20, 26, 32, 38, 44, 50	Scale
		Spiritual Growth 6, 12, 18, 24, 30, 36, 42, 48, 52	Scale
		Interpersonal Relations 1, 7, 13, 19, 25, 31, 37, 43, 49	Scale
		Stress Management 5, 11, 17, 23, 29, 35, 41, 47	Scale

emotional support and life satisfaction, and veteran status] were reported as totals, frequencies, and percentages. In order to gain a better understanding of what prevented the sheltered homeless women in the present study from taking part in health promoting behaviors, an open-ended question asked “What things get in the way or stop you from taking part in health promoting behaviors?” The question allowed the collection of information as it is was expressed naturally by the women in the context of homelessness instead of limiting the collection of data that are specific and limited to particular pieces of information being studied (Macnee, 2004). However, for this study, the decision was made *a priori* that data were to be sorted and reported according to subscales used in the HPLP II. Using the Kincaid-Flesch Grade Level (Flesch, 1948) measurement computed by Microsoft Word software, the instrument was assessed at a 4th grade reading level (Ballard, 2007).

Self-Rated Abilities for Health Practices Scale (SRAHP)

Becker and others’ (1993) SRAHP scale measures perceived self-efficacy for health-promoting behaviors. The 28-item scale asked the women to rate their perceived ability to perform each health behavior on a 5-point scale from 0 *not at all* to 4 *completely*. Validity was assessed with correlations between a general self-efficacy scale and the total SRAHP scale (r = .43), Responsible Health Practices subscale (r =.44), and Psychological Well-Being subscale (r = .43). Cronbach’s alpha for the total scale was .94, and the Cronbach’s alpha for the Exercise, Nutrition, Psychological Well-Being, and Responsible Health Practices subscales were .92, .81, .90, and .86, respectively (Becker et al., 1993). For this study, Cronbach’s alpha for the SRAHP total scale was .93 and the alphas for the subscales were .89, .89, .81, and .84 for Exercise, Psychological Well-being, Nutrition, and Health Practices, respectively. Reliability

analysis for the SRAHP Exercise subscale showed an increase in Cronbach's Alpha from .89 to .92 when the item "brushing teeth regularly" was deleted from the exercise subscale. Also, deleting the item "drink water'' from the Nutrition subscale increased the Cronbach's alpha from .81 to .83. Deleting any item from the Psychological Well-being subscale or the Health Practices subscale only decreased the Cronbach's alpha for each of the subscales. For this study, all items were retained in the total scales and subscales of both instruments. Findings for the total scale and the subscales were reported using means, standard deviations, and ranges. The scores were added and then divided by the number of items for total scale and for each subscale to maintain scores in the original scale of 1 to 4. Correlation coefficients of the SRAHP were reported using Pearson *r and* Spearman's *rho* for interval or ordinal data, respectively.

Health Promoting Lifestyle Profile II

The revised HPLP II is a 52-item summated rating scale that is designed to measure health-promoting behaviors through a 4-point response (never, sometimes, often, routinely; Pender, Murdaugh, & Parsons, 2006). Scores range from 52 to 208 with higher ratings indicating more participation in health promotion activities. The dimensions of the concept health-promoting behaviors include six subscales: Health Responsibility, Physical Activity, Nutrition, Spiritual Growth, Interpersonal Relations, and Stress Management. Validity and reliability of the HPLP II were tested by collecting data from 712 adults (S. N. Walker, personal communication, October 26, 2006; see Table 3). Content validity was established through literature review and content experts' evaluation. Construct validity was established using factor analysis that confirmed that 6 subscales of health-promoting lifestyle should be retained in the new model. Cronbach's alpha for the total scale for the English version was .94; Cronbach's alphas for the

subscales ranged from .78 to .87: Health Responsibility (.86), Physical Activity (.85), Nutrition (.80), Spiritual Growth (.86), Interpersonal Relations (.87), and Stress Management (.79). The 3-week test-retest stability coefficient for the total scale was .89 (Walker & Hill-Polerecky, 1996; S. N. Walker, personal communication, October 26, 2006).

For this study, Cronbach's alpha was computed to obtain internal consistency estimates of reliability for the HPLP II and its six subscales. Standardized alpha was reported for the HPLP II total scale and six subscales. Cronbach's alpha for the HPLP II total scale was .94 and the subscale alpha results were .80, .83, .76, .88, .81, and .82 for Health Responsibility, Physical Activity, Nutrition, Spiritual Growth, Interpersonal Relations, and Stress Management subscales, respectively. The Cronbach's alpha for the HPLP II subscale, Health Responsibilities, increased from .80 to .81 when the item "Read or watch TV programs about improving health" was deleted. Cronbach's alpha increased from .82 to .83 when the item "Get enough sleep" was deleted from the Stress Management subscale. Deleting any item from the subscales Physical Activity, Nutrition, or Spiritual Growth decreased the Cronbach's alpha for the subscale. For this study the scores were added and then divided by the number of items for total scale and for each subscale to maintain scores in the original scale of 0 to 4. Correlations scores of the HPLP II will be reported using Pearson *r or Spearman's Rho.*

The revised instrument has been widely used in studies of adolescents, adults, and older adults. The instrument has been shown to have good validity and reliability (S. N. Walker, personal communication, October 26, 2006). The revised and updated instrument allows researchers to better measure patterns of health-promoting behaviors in intervention and outcome studies (Walker & Hill-Polerecky, 1996; S. N. Walker,

personal communication, October 26, 2006). Permission was obtained from Dr. Susan Noble Walker to use the HPLP II.

Table 3

Definitions for the Dimensions of the Health-Promoting Lifestyle Profile II

Subscale/Dimension	Definition
Health promotion	Developing a person's resources that maintain and enhance well-being.
Health responsibility	Attending to and accepting responsibility for promoting one's own health, asking for information about health, and seeking professional assistance when necessary
Physical activity	Adhering to regular exercise patterns
Nutrition	Making food choices that supply adequate and appropriate nutrients to one's body
Spiritual growth	Taking a positive approach that leads toward self-actualization and fulfillment of one's highest potential for wellness
Interpersonal relations	Maintaining relationships with significant others, families, and health professionals on health behaviors
Stress management	Recognizing the sources of stress and taking action to control health-damaging effects of stress and achieve relaxation

Note. Adapted from Bagwell & Bush, 2000; Lee & Loke, 2005; Pender, 1997; S.N. Walker, personal communication, October 26, 2006.

Pilot Study

A pilot study with 25 sheltered homeless women was conducted in summer of 2007 to assess the questionnaire used to measure Pender's Health Promotion Model

constructs for acceptability, readability, and respondent burden for use with sheltered homeless women. The women reported that the questionnaire was easy to read (although some assistance was required to explain the meaning of “intimacy” and “target heart rate”), contained no offensive questions, and was not time intensive to complete. Time reported by the women to complete the questionnaire ranged from 10 to 45 minutes with a mean of 23 minutes. All respondents were able to self-complete the questionnaire. The study documented that sheltered homeless women were accessible for this dissertation study and the questionnaire met the criteria for acceptability, readability, and respondent burden for use with sheltered homeless women (Ballard, 2008).

Protection of Human Subjects

Institutional Review Board (IRB) and agency administration approval from the three shelters were obtained. Verbal and written explanations of the study purpose, the involvement and time required, the right to confidentiality and anonymity, the right to ask questions of the investigator, and the right to withdraw from the study was shared with each participant. Emphasis was placed on assuring the women that declining to participate or withdrawing from the study would not jeopardize their care in the homeless shelter; and participation was entirely voluntary. Anonymity was maintained by not linking demographic characteristics such as age, marital status, employment status, or disease state with individual participants (Morse & Richards, 2002). Each woman who agreed to participate signed a consent form. The participant received a copy of the consent form that included an explanation of procedures for completing the questionnaires. The consent form delineated the risks and potential benefits, the

planned use of the data, and a contact telephone number for the primary investigator. Brochures for crisis hotlines were available for women who expressed a need for counseling or other support. Participants who had difficulty reading the consent form were assisted. In appreciation for her participation in the study, a $10 gift card was given to each participant. Completed questionnaires are locked in a designated, fireproof cabinet in the researcher's office. Data entry and analysis are stored on the principal investigator's personal computer and access to the research files is password protected. A backup copy of the files is maintained on a jump drive that is kept in a fireproof box at a location different from the principal investigator's personal computer. The researcher protects the anonymity of the respondents by keeping all data safe and secure and by separating participants' names from identification numbers on the data forms as per the IRB approval.

Data Collection

Recruitment flyers approved by the University of North Carolina at Greensboro Institutional Review Board (IRB) were placed in strategic places in each of the three shelters with the researcher's contact information. The flyers showed the dates and times the researcher would be at each shelter for data collection. Recruitment was also generated by word of mouth of other participants in the study and shelter staff. All clients who met inclusion criteria were eligible to participate in the study. Verbal and written explanation of the study purpose (to find out more about the health-promoting behaviors of sheltered homeless women), confidentiality of information gathered, and withdrawal rights without penalty were shared with each participant. Emphasis was placed on assuring the women that declining to participate or withdrawing from the study would not

jeopardize their care in the homeless shelter. After signing the informed consent, the participants were asked to complete the questionnaire.

Data collection took place in a quiet, private location within the identified homeless shelters. A packet secured with a paperclip containing a letter explaining the purpose of the study, the three numbered instruments (HPLP II, SRAHP, and PHF) and a pencil was given to each consenting participant by the PI according to protocol. The PI remained in the room/area to answer any questions as needed during the data collection process. When the participant returned the packet to the PI, each questionnaire was visually checked for missing data and a request was made for clarification/completion if needed. In appreciation for her participation in the study, a $10 gift card was given to each participant. Healthy snacks were also available for the women.

Data Preparation

This section includes a discussion of the procedures used for screening data prior to data analysis. Data screening procedures included assessment for accuracy of data entry, missing data and outliers, and violation of regression assumptions (Tabachnick & Fidell, 2001).

Data Entry and Validation

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows Version 15.0 (SPSS, 2007). The data file was proofread with the original data being compared with the computerized data file in the data window. One person read the original case data as a second person looked at each entry of the computerized data file. When a discrepancy was found, the questionnaire entry was examined and correction made in the computerized data file.

Preliminary Analysis and Treatment of Missing Data

The second step of data screening involved examining frequencies tables and graphic charts to inspect data for missing values, values outside the coding limits (wild codes), and outliers. Missing values were found to be scattered randomly for the HPLP II and the SRAHP items. The HPLP II items had 27 (0.41%) randomly scattered data points missing. The SRAPH items had 12 (0.34%) missing data points. Tabachnick and Fidell (2001) indicate that if there is 5% or less of missing data points and if a pattern of scattered randomness is present the problem of missing data is less serious than if large amounts of data are missing or the pattern of missing data are nonrandom. For individual missing data, the mean item value for the other answered items for that individual on the subscales was imputed for the missing values (Polit & Beck, 2008). The mean score for age (41.99 was rounded to 42 years) was imputed for the missing values of age.

Wild codes are values that are not part of the legitimate response for a variable (Polit & Beck, 2008). The frequency tables in the SPSS output were inspected for any unusual values outside the coding limits. Unusual values were examined by checking the original sources/case data, determining the correct codes, and making the appropriate corrections. Incorrect data entries were found to be the problem for wild codes and data were corrected.

Outliers were examined using box plots. There were 2 outliers for the educational level variable. Of the SRAHP items, there were 5 outliers for “brush my teeth regularly,” 8 outliers for “doing things that make me feel good about myself,” choosing 0 “not at all” or 1 “a little, 7 outliers for “use medication correctly,” and 5 outliers for “know my rights and stand up for myself effectively,” all choosing 0 “not at all” and 1 “a little.” There were

4 outliers for ”figure out how I respond to stress,” and 3 outliers for “change things in my life to reduce my stress,” both choosing 0 “not at all.” For the HPLP II, there were 1 outlier for “choose a diet low in fat, saturated fat, and cholesterol,” 3 outliers for “follow a planned exercise program,” 4 outliers for “read or watch TV programs about improving health,” 4 outliers for “eat 6-11 servings of bread, cereal, rice and pasta each day,” “do stretching exercises at least 3 times per week,” “check my pulse when exercising,” 3 outliers for “attend educational programs on personal health care,” 4 outliers for “reach my target heart rate when exercising,” choosing 4 “routinely, and there were 4 outliers for “look forward to the future,” choosing 1 “never.” An examination of these outliers revealed that the outliers were random. Because the outliers were legitimate values, data were left unchanged.

Data Analysis

Descriptive statistics were obtained for each variable. Frequencies and valid percents were assessed for nominal and ordinal data and means, standard deviations, and ranges were assessed to describe interval and ratio data. Means, standard deviations, ranges, and Cronbach’s reliability coefficient alphas were assessed for the subscale scores and the total scores for the HPLP II and SRAHP. Independent-sample *t*-tests were conducted to test for significant differences between group means of selected socio-demographic variables as sample descriptive information. Bivariate correlation coefficients, Pearson’s product-moment correlation (Pearson’s *r)*, were used to describe the relationships between key continuous variables and Spearman’s rank-order correlation (Spearman’s *rho*) was used to describe relationships between key ordinal variables (Gliner & Morgan, 2000; see Tables 5 & 6). Multiple linear regression analyses

were calculated to examine the strength of relationships between independent variables and health promoting behaviors and to examine which variables (i.e., perceived self-efficacy, social and emotional support, educational level, personal factors) explained the most variance in health-promoting behaviors of sheltered homeless women. Hierarchical linear regression was used to enter variables in as blocks for analysis. Behavior-specific cognition variables (SRAHP total and social and emotional support) were entered in Step 1 and demographic and personal factors were entered in Step 2. Only variables that were significantly correlated with the HPLP II were entered into the multiple regression equation. In Step 3, variables that did not have a statistically significant influence on health promoting behaviors were eliminated from the equation.

CHAPTER IV

RESULTS

In Chapter IV the results of descriptive data analyses for sociodemographic characteristics, health status, health practices, health access, homeless history, and health-promoting behaviors are presented. Veteran status was not addressed because only three of the women reported having served on active duty in the U.S. military. Additionally, examination of relationships among selected variables was conducted using correlations and multiple linear regressions. Each research question will be addressed separately.

Research Question 1

What are the sociodemographic characteristics of sheltered homeless women?

Individual Characteristics and Personal Experiences

As shown in Table 4, most of the women were African American (54%, *n* = 68) and approximately one-third were white (32.5%, *n* = 41). The remaining women were American Indian (4.8%, *n* = 6), mixed race (4.8%, *n* = 6), Asian (1.6%, *n* = 2), and "other/unsure" (4.4%, *n* = 3). Race varied by shelter, with the Women's Center of Raleigh having 74.2%, Salvation Army of Charlotte having 56.6%, and Women's Healing Place having 37.5% African American women, although the difference was not significant [$\chi^2(10, N = 124) = 15.44, p = .117$].

Most of the women were not married or partnered. Forty percent (*n* = 50) reported they were single/never married and 32.5% (*n* = 41) reported they were divorced. Only 7% (*n* = 9) reported that they were married (see Table 4).

Approximately one-third (31.8%, *n* = 40) of the women reported they had not completed high school, while 31% *(n* = 39) reported they had completed a high school education or received a general equivalency diploma (GED) and 30.2% (*n* = 38) reported they had attended college or technical school. Only 7.0% (*n* = 9) of the women reported they had a college degree (see Table 4).

Most (84.7%, *n* = 105) of the women reported they were unemployed. Of these, 29.4% (*n* = 37) reported being out of work for more than a year, 23.8% (*n* = 30) out of work less than a year, and 31.7% (*n* = 40) unable to work due to physical and /or mental health issues. Only 15.3% (*n* = 19) reported currently working either full time or part time (see Table 4).

The mean age for the women was 41.99 years (*SD* = 9.42) and their ages ranged from 18 to 62 years. Thirty percent *(n* = 38) of the women were between the ages of 18 and 39 years while 70% (*n* = 88) were 40 years to 62 years old. Dividing age into below age 40 and 40 and older was determined by the suggestion that preventive health procedures differ for women less than 40 years old than women 40 years or greater in age (U.S. Preventive Services Task-Force, 2008).

Seventy four percent (*n* = 93) of the women reported having children (*M* = 2.71, *SD* = 1.75). The ages of the children ranged from less than 1 year old (*n* = 7, .03%) to 48 years old for one adult child. Approximately 50% of the 252 children (*n* = 125) were under the age of 18. The women also reported that 37% (*n* = 92) of the children were living independently, 17% (*n* = 42) lived with grandparents, 9% (*n* = 22) lived with their fathers, and 12% (*n* = 31) lived with their mothers in the shelter. The remaining 65 children (26%) were living other places such as with aunts (4%, *n* = 10), foster care (1%,

n = 3), prison (< 1%, *n* = 2), adopted (4%, *n* = 10), friends (3%, *n* = 7) and other unspecified places (13%, *n* = 33).

Table 4

Personal Health Form: Demographic Data for Total Sample

Variable	*n*	*f*	%
Race/ethnicity	126		
Black/ African American		68	54.0
White		41	32.5
American Indian or Alaska Native		6	4.8
Mixed Race (please specify)		6	4.8
Asian		2	1.6
Don’t know/ Not sure		2	1.6
Other		1	0.8
Native Hawaiian /Other Pacific Islander		0	0
Marital status	126		
Single (never married)		50	39.7
Divorced		41	32.5
Separated		14	11.1
Married		9	7.1
Widowed		9	7.1
A member of an unmarried couple		3	2.4

Table 4 *(continued)*

Variable	*n*	*f*	%
Education	126		
Grades 1 through 8 (Elementary)		6	4.8
Grades 9 through 11 (Some high school)		34	27.0
Grades 12 or GED (High school graduate)		39	31.0
College 1 year to 3 years (or technical school)		38	30.2
College 4 years or more (College graduate)		9	7.1
Employment: Job Status	126		
Unable to work		40	31.7
Out of work for more than 1 year		37	29.4
Out of work for less than 1 year		30	23.8
Employed for wages		17	13.5
Self-employed		2	1.6
Employment Status	124		
Employed	19		15.3
Black/African American		11	57.9
White		6	31.6
Other		2	10.5
Unemployed	105		84.7
Black/African American		57	54.3
White		35	33.3
Others		13	12.4

Research Question 2

What is the current health status and what were health practices of sheltered homeless women?

Personal factors. Table 5 provides a summary of the women's self-reported health status, physical health, locations of usual health care, insurance status, and mental health. Seventy two (57.2%) of the women reported their health to be good to excellent, while 47 (37.3%) reported fair to poor health, and 7 (5.6%) women reported they were not sure about their health status. The most common physical disease that the women reported was high blood pressure (41.1%) followed by asthma (26.8%), arthritis (25.0%), and sexually transmitted diseases (STD) (22.4%).

Mental health indicators were assessed by asking the women to write the number of days that they experienced mental health symptoms in the past two weeks. Table 5 shows that 72.2% (*n* = 91) reported feeling tired, 68.3% (*n* = 86) reported feeling depressed and hopeless, 65.0% (*n* = 82) reported difficulty sleeping 57.9% (*n* = 73) reported decreased interest, 57.9% (*n* = 73) reported feeling like a failure, 57.1% (*n* = 72) reported changes in appetite, 45.2% (*n* = 57) reported difficulty concentrating, and 36.5% (*n* = 46) reported feeling sluggish or fidgety. Feeling tired was the most frequently reported mental health symptom.

Days of mental health symptoms were categorized according to the *Behavioral Risk Factor Surveillance Survey* (CDC, 2006) so the findings in the current study could be compared to findings relevant to women in North Carolina. Table 6 presents the days of mental health symptoms reported by the women. Some women reported they had no symptoms in the past two weeks, and the number of days varied by symptom. Over half of the women reported that they had no symptoms of being slow or fidgety (63.5%) or,

Table 5

Personal Health Data: Health Status, Physical Diseases, Location of Usual Health Care, Current Health Insurance, and Mental Health Indicators

Variables	*n*	*F*	%
Health status	126		
Excellent		7	5.6
Very good		27	21.4
Good		38	30.2
Fair		32	25.4
Poor		15	11.9
Don't know or not sure		7	5.6
Physical diseases[1]			
High blood pressure	116	48	41.1
Asthma	112	30	26.8
Arthritis	108	27	25.0
Sexually transmitted diseases (STDs)	116	26	22.4
Diabetes	111	17	15.3
Chronic bronchitis	109	16	14.7
Stomach ulcer	111	15	13.6
Skin problems	110	14	12.6
Heart disease	109	9	8.3
Cancer	108	3	2.8
Location of usual health care[2]	125		
Public clinic		47	37.3
Emergency room		44	34.9
Doctor's office		37	29.4
No where		10	7.9
Other places		8	6.3

Table 5 (continued)

Variables	*n*	*f*	*%*
Health insurance	125		
No		89	71.2
Yes		36	28.8
Mental health indicators (at least 1 day of symptoms in past 14 days)	126		
Tired/little energy		91	72.2
Felt down, depressed, or hopeless		86	68.3
Difficulty sleeping		82	65.0
Feeling of failure		73	57.9
Little interest or pleasure in doing things		73	57.9
Changes in appetite		72	57.1
Difficulty concentrating		57	45.2
Sluggish/fidgety		46	36.5
Diagnosed with mood disorder by health care provider	106		
Depressive disorder		65	56.5
Anxiety disorder		44	41.5

[1] Women could report more that one physical disease.

[2] Women could report more than one location of health care provider.

[3] Women could report more than one mental health symptom

Table 6

Days with Mental Health Symptoms Over the Past Two Weeks, (N = 126)

	Number of Symptom Days									
	None		1-2		3-7		8-13		14	
Symptoms	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Little interest	53	42.1	27	21.4	16	12.8	7	10.4	23	18.3
Depressed or hopeless	40	31.7	25	19.8	29	23.1	6	4.8	26	20.6
Sleep difficulty	44	34.9	20	15.8	27	21.5	5	4.2	30	23.8
Tired	35	27.8	19	15.0	28	24.6	9	7.2	32	25.4
Appetite changes	54	42.9	19	15.0	19	45.2	9	7.2	25	19.8
Feeling of failure	53	42.1	24	19.0	18	14.4	6	4.8	25	19.8
Difficulty concentrating	69	54.8	18	14.2	16	12.8	5	4.0	18	14.3
Slow or fidgety	80	63.5	19	15.0	9	7.5	4	3.2	14	11.1

difficulty concentrating (54.8%). However, more than half of the women reported having at least one day over the 14 days of having little interest, being depressed and hopeless having sleep difficulty, being tired, having appetite changes, and having feelings of failure. About one in four of the women reported symptoms of psychological distress and depression on more than seven (8-13 and 14 days) of the 14 days. Other mental health symptoms reported by the women were being tired (25.4%), having sleep difficulty (23.8%), feeling depressed and hopeless (20.6%), having appetite changes (19.8%), and experiencing feelings of failure (19.8%). Overall, of the women reporting symptoms, a higher percentage of women reported experiencing lack of sleep, increased tiredness,

feelings of failure, difficulty concentrating and little interest or lack of pleasure doing things in the past 14 days, suggestive of depressed mood. A mental health score was computed by summing the number of days that mental health symptoms were reported. The scores ranged from no days of symptoms to 112 days of symptoms (M = 34.1, SD = 31.7).

Indeed, nearly 42% (n = 44) of the women reported being diagnosed by a health care provider with an anxiety disorder and 56.5% (n = 65) reported being diagnosed with a depressive disorder (see Table 5). To meet chi-square analysis assumptions of at least 5 cases per cell, the number of symptoms variable was collapsed to the categories of "0," "1-2," "3-4," "5-6," and "7" symptoms. There was a statistically significant relationship between being diagnosed with anxiety and number of mental health symptoms reported [$\chi^2(4, N = 106) = 17.192, p = .002$]. There was also a significant relationship between being diagnosed with depressive disorder and number of mental health symptoms reported [$\chi^2(4, N = 115) = 11.371, p = .023$].

Prior related behaviors. Table 5 shows that of the 125 women who reported receiving care, 37.3% (n = 47) at public clinics, 34.9% (n = 44) in emergency rooms, 29.4% (n = 37) in doctors' offices, 7.9% (n = 10) received no care, and 6.3% (n = 8) did not specify a place for receiving health care. Of the 125 women who knew their insurance coverage status, only 29% (n = 36) were covered. Independently of insurance status, 58% (n = 68) of the 117 women reported that there had been a time in the past twelve months when they were unable to see a doctor due to cost.

Table 7 shows the women's self-reported time since their last visit for mammogram and Papanicoloau's (Pap) test and medical, dental, and vision care. Over 70.4% of the women reported having a Pap test in the past 2 years and 38.2% reported

having a mammogram. Of the women who reported receiving preventive care in the past two years, 69.5% (*n* = 89) reported making a medical visit for a routine checkup, 53.6% (*n* = 67) reported having a routine eye checkup, and 50.4% (*n* = 63) reported having a routine dental checkup.

Table 7

Personal Health Data: Time Since Last Health Visit for Mammogram, Pap Test, Medical, Dental, and Vision Care

Variable	Mammogram (*N* = 123)		Pap Test (*N* = 125)		Medical Visit (*N* = 125)		Dental Visit (*N* = 125)		Vision Care (*N* = 125)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
< than 1 year	29	23.6	56	44.8	74	57.8	41	32.8	40	32.0
1-2 years	18	14.6	32	25.6	15	11.7	22	17.6	27	21.6
3-4 years	13	10.6	12	9.6	12	9.4	19	15.2	15	12.0
> 5 years	15	12.2	8	6.4	11	8.6	27	21.6	23	18.4
Never	11	8.9	0	0	0	0	0	0	3	2.4
Unsure	37	30.1	17	13.6	13	10.2	16	12.8	17	13.6

Table 8 shows the majority (63.3%, *n* = 86) of the women reported they had smoked at least 100 cigarettes in their lifetime. Of those now smoking, 85.9% (*n* = 73) reported they smoked every day. Of the 102 women who answered the question, 45.1% (*n* = 46) reported they had stopped for one day or longer. For life time history of smoking, only 15.1% (*n* = 19) of the women reported that they never smoked. The high

percentage of asthma and chronic bronchitis among the participants could be related to the high percentage of smokers.

Table 8

Smoking History of Homeless Sheltered Women

Variables	*n*	*f*	%
Cigarette Use	126		
Life time history (at least 100 in lifetime)			
Yes		86	68.2
No		21	16.7
Never smoked		19	15.1
Smoke now	85		
Every day		73	85.9
Some days		12	14.1
Stopped smoking for 1 day or longer	102		
No		56	54.9
Yes		46	45.1

Interpersonal influences. Table 9 shows 76% (*n* = 96) of the women when asked "how often do you get the social and emotional support you need" reported they received social and emotional support from others. In contrast, 22% (*n* = 28) of the women reported they rarely or never received social and emotional support. Only a few of the women reported they were unsure about having received social and emotional support.

Table 9

Interpersonal Influences: Social and Emotional Support

Variables	*n*	*f*	%
Social and emotional support	126		
Don't know or not sure		2	1.6
Never		11	8.7
Rarely		17	13.5
Sometimes		41	32.5
Usually		18	14.3
Always		37	29.4

Situational Influences. Table 10 shows homeless history data related to reasons for present homelessness, living arrangements prior to coming to shelter, history of homelessness, history of foster care and veteran status, and length of stay in the shelter. More than half (53.2%, *n* = *67*) of the women identified drugs or alcohol as the reason for homelessness at the time. Loss of job (30.2%, *n* = 38) and eviction or lack of money to pay for the rent (30.2%, *n* = 38) were identified as the second major reasons for present homelessness. Relationship problems (19.8%, *n* = 25) were reported to have contributed to some women's present situation. Only 7.1% (*n* = 9) of the women reported physical illness, and 12.7%, (*n* = 16) reported emotional or mental illness as the reason for their present homelessness.

Table 10

Situational Influences: Reason for Current Homelessness, Living Arrangements prior to Shelter, Previous Homelessness, History of Foster Care, and Veteran Status

Variable	*n*	*f*	*%*
Reason for homelessness at this time[1]	126		
Drugs or alcohol		67	53.2
Loss of job		38	30.2
Eviction/lack of money to pay rent		38	30.2
Relationship problems / conflicts		25	19.8
Violence		17	13.5
Emotional or mental illness		16	12.7
Legal problems		13	10.3
Physical illness		9	7.1
Prior living arrangements	126		
Family or friends		51	40.5
Own apartment or house		35	27.8
Street		15	11.9
Hotel		10	7.9
Prison		7	5.6
Another shelter		7	5.6
Previous history of homelessness	124	66	53.2
Foster care as a child	124	15	12.1
Veteran status	126	3	2.4

[1] Women could report more than one reason for current homelessness.

Examining prior living arrangements, 40.5% (*n* = 51) of the women reported they had lived with family or friends, and 27.8% (*n* = 35) had lived in their own apartment or house prior to coming to a shelter. Living on the street prior to coming to shelter was reported by 11.9% (*n* = 15) of the women followed by living in a hotel (7.9%, *n* = 10), prison (5.6%, *n* = 7), or another shelter (5.6%, *n* = 7). Fifty-three percent (*n* = 66) reported being homeless at another time in their life, and 12.1% (*n* = 15) reported they had lived in foster care as a child. Only 2.4% (*n* = 3) of the women reported that they ever served on active duty in the U.S. military.

The length of stay in the shelter for their current episode of homelessness ranged from 1 day to 510 days (*M* = 109 [*SD* = 124.9], median = 59, mode = 1). An outlier of 797 days for one woman who had been at the shelter was not included in the average length of stay.

Behavior-Specific Cognitions and Affect

Behavior-specific cognitions and affect includes model constructs of perceived barriers to action (measured as barriers to health care) and perceived self-efficacy (measured as SRAHP). These variables represent the perceptions the women have about barriers that may prevent them from receiving adequate health care and about their ability to carry out health promoting behaviors.

Barriers to health care. As shown in Table 11, the barriers to health care most frequently reported by the women included financial (61.1%, *n* = 77), transportation (31.0%, *n* = 39), and unsure where to go (19.0%, *n* = 24). Additionally, the women reported being afraid or nervous about health visits (7.9%, *n* = 10) and lacking trust for health care providers (7.2%, *n* = 9). Few (5.6%, *n* = 7) women reported lack of childcare as a major barrier to health care; however, only shelter #1 allowed the mothers and

children to stay together in the shelter. In addition, 37% (*n* = 92) of the 252 children were reported to be living on their own.

Table 11

Barriers to Health Care

Variables	*n*	*f*	%
Barriers to health care[1]	126		
Lack of money		77	61.1
Lack of transportation		39	31.0
Nothing		28	22.2
Unsure where to go		24	19.0
Afraid or nervous		10	7.9
Other		9	7.1
No childcare		7	5.6
Lack of trust of health care provider			
Doctors		5	4.0
Nurses		4	3.2

[1]Women could report more than one barrier to health care.

Perceived self-efficacy. The SRAHP revealed a total scale mean score of 2.42 (*SD* = .76) indicating that the women had only a modest perception that they were able to carry out health practices. The means from the highest to the lowest scores for the subscales Health Practices, Psychological Well-being, Nutrition, and Exercise were 2.87, 2.55, 2.18, and 2.09, respectively. The distributions for the total and subscales were

negatively skewed suggesting that many of the women perceived they were not able to perform various health practices. Skewed subscale scores ranged from -.898 for Health Practices to -.072 for Exercise (see Table 12).

Table 12

Mean, Standard Deviation, and Range for the Health Promotion Model Measures (N = 126)

Measures	Mean	SD	Range
	SRAHP		
Total Scale	2.42	.76	.25 – 4.00
Health Practices	2.87	.86	.00 – 4.00
Psychological Well-	2.55	.92	.00 - 4.00
Nutrition	2.18	.98	.00 – 4.00
Exercise	2.09	1.04	.00 – 4.00
	HPLP II		
Total Scale	2.49	.48	1.48—3.88
Spiritual Growth	2.96	.63	1.44 - 4.00
Interpersonal Relations	2.76	.56	1.67 - 4.00
Stress Management	2.52	.62	1.50 – 4.00
Health Responsibility	2.37	.59	1.00 – 3.78
Nutrition	2.28	.58	1.11 – 3.67
Physical Activity	2.08	.66	1.00 – 3.88

Research Question 3

What are the health-promoting behaviors of sheltered homeless women?

Behavior Outcome

Health promotion behavior. As shown in Table 12, the mean score for the HPLPII total scale was 2.49 (*SD* = .48), indicating that the women's overall health practices were positive but not to the level of practicing health promotion behaviors routinely. Of the 6 subscales, Spiritual Growth (*M* = 2.96, *SD* = .63) followed by Interpersonal Relations (*M* = 2.76, *SD* = .56) and Stress Management (*M* = 2.52, *SD* = .62) were the most practiced psychological health promoting behaviors. The mean scores from the highest to lowest for Health Responsibility, Nutrition, and Physical Activity were 2.37 (*SD* = .59), 2.28 (*SD* = .58), and 2.08 (*SD* = .66), respectively, indicating that women participated less frequently in these physical health promoting activities. The distribution is positively skewed, implying that sheltered homeless women do not often or routinely engage in health practices or health promoting activities. The skewed subscale scores ranged from .048 for Spiritual Growth to .546 to Physical Activity.

Qualitatively, the women in this study reported a variety of barriers to participating in health promoting behaviors when asked, "What things get in the way or stop you from taking part in health-promoting activities?" Ten percent (*n* = 13) of the women reported not participating in physical activity because of environmental barriers (e.g., "lack of safe place to exercise," "no recreational center like a club house or gathering place to exercise," "can not afford the gym," "not being able to pay membership fees," "lack of money," "not aware of where and what to do on exercising," "sometimes my schedule is too busy") and 7% (*n* = 9) reported physical health problems (e.g., "can't walk good because of hip and knee and back problems," "need surgery to

repair my hernia,“ “lupus,” “breathing is too bad, asthma,” “high blood pressure,” “lack of energy”). Seven percent (*n* = 9) of the women reported barriers to healthy eating or nutrition (e.g., “lack of choice in foods,” “can’t cook my own food,” “can’t afford to have a choice in what I eat,” “no fruits cooked around here or fresh, only bananas and apples”). Ten percent (*n* = 13) of the women reported barriers to participation in health responsibility or taking charge of their own health (e.g., “alcoholism and drug use,” “mental health problems” “price, not having money,” “transportation,” “lack of will,” “lack of self-care, “lack of insurance,” “lack of interest). Six percent (*n* = 8) of the women reported barriers to stress management (e.g., “lack of sleep and rest,” “tired,” “shelter schedule to busy,” “lack of self-caring,” “being homeless,” “not having a home or job,” being very upset everyday,” “being very upset every day,” “depression”) while less than .05% (*n* = 4) of the women reported interpersonal relations barriers (“people getting on my nerves, isolation,” “sometimes my busy schedule and the environment,” “job””). No women reported barriers related to spiritual growth. However, 12% (*n* = 15) of the women reported lack of money as reason for not taking part in health promoting behaviors. Less than .05% (*n* = 5) reported transportation as a barrier to participating in health promoting behaviors. Fourteen percent (*n* = 18) of the women reported “nothing” or “none” in response to being asked what prevents you or stops you from taking part in health promoting behaviors.

Selected variables (i.e., health status, education, social and emotional support, and age) were recoded to dichotomous variables that categorized data into two groups. Health status was recoded as 1 for “good,” “very good,” and “excellent” and 0 for “fair” and “poor.” Education was also recoded as 1 for high school or higher educational levels and 0 for less than high school education. Social and emotional support was recoded as

1 for “usually” and “always” and 0 for “never,” “rarely,” and “sometimes.” Age was dichotomized as 1 for 40 years old and older and 0 for less than 40 years old. *T*-tests were conducted to determine if the scores/means of two independent groups differed on the HPLPII total and subscales, SRAHP total and subscales, and barriers to health care.

After the selected variables were dichotomized, the two sample sizes of the independent groups were markedly dissimilar or unequal and the variances were assumed to be different. The t-test values reported are for unequal sample sizes and the group variances were assumed to be different (see Tables 13, 14 and 15).

Table 13 presents, for the two groups of health status coded as 0 for “fair to poor” and 1 for “good to excellent,” the results of the *t*-tests of differences in mean scores of

Table 13.

Independent t-Tests for Health Status by HPLP II, SRAHP, and Barriers to Health Care

Scale	Health status[a]	*M*	*SD*	*t*	*df*
HPLP II total	Fair to poor	2.30	.416	-4.16*	107
	Good to excellent	2.64	.474		
Health responsibility	Fair to poor	2.27	.516	-2.09*	109
	Good to excellent	2.49	.612		
Physical activity	Fair to poor	1.86	.537	-3.38*	112
	Good to excellent	2.24	.673		
Nutrition	Fair to poor	2.07	.544	-3.54*	100
	Good to excellent	2.43	.555		
Spiritual growth	Fair to poor	2.69	.578	-4.30*	100

Table 13 (continued)

Scale	Health status[a]	*M*	*SD*	*t*	*df*
	Good to excellent	3.16	.591		
Interpersonal relations	Fair to poor	2.62	.482	-2.79*	109
	Good to excellent	2.89	.5679		
Stress management	Fair to poor	2.32	.557	-3.60*	104
	Good to excellent	2.71	.601		
SRAHP total	Fair to poor	2.18	.710	-3.58*	98
	Good to excellent	2.65	.702		
Psychological well-being	Fair to poor	2.27	.920	-3.52*	85
	Good to excellent	2.84	.753		
Exercise	Fair to poor	1.84	.954	-2.51*	105
	Good to excellent	2.30	1.044		
Nutrition	Fair to poor	1.91	.941	-3.08*	96
	Good to excellent	2.44	.913		
Health practices	Fair to poor	2.70	.886	-2.18*	88
	Good to excellent	3.04	.767		
Barriers total	Fair to poor	1.79	1.22	1.18*	92
	Good to excellent	1.53	1.10		

Note: HPLPII = Health-Promoting Lifestyle Profile II; SRAHP = Self-Rated Abilities for Health Practices; *$p < .05$. [a]Health status was recoded 0 for “fair to poor” and 1 for “good to excellent.”

the HPLPII total and subscales, the SRAHP total and subscales, and barriers to health care for self-reported health status. The women who reported their health status as fair to poor had lower mean scores on the HPLPII total and subscales and on the SRAHP total and subscales than women who report their health status as good to excellent. There were significant group differences in health status on all subscales and the total scale of the HPLP II. Women in the fair to poor health status group participated less in all health promoting behaviors than women with good to excellent health. There were also significant group differences in health status on all subscales and total scale of the SRAHP. Women who reported their health status as fair to poor felt less able to participate in health practices than women who reported their health status as good to excellent. In addition, women who rated their health as fair to poor reported more barriers to health care than those reporting their health as good to excellent. Additionally, women who reported their health as fair to poor reported being less able to engage in health practices, having more barriers to health care, participating less in health promoting activities than women who reported their health status as good to excellent.

Table 14 presents, for the two groups of education level coded as 0 for “less than high school” and 1 for “high school or greater, results of the *t*-test of differences in mean scores of the HPLPII total and subscale, the SRAHP total and subscales, barriers to health care for educational level. Women with less than high school education reported lower mean scores for the HPLP II total score and the subscales of physical exercise and nutrition subscales and the SRAHP total score and the subscales of exercise and nutrition. Women with less than a high school education reported they were less able to participate in health promoting behaviors than women who reported high school or greater education. The scores for less educated women indicate that the lack of

Table 14

Independent t-Tests for Education by HPLP II, SRAHP, and Barriers to Health Care

Scale	Education[a]	*M*	*SD*	*t*	*df*
HPLP II total	< HS	2.37	.332	-2.23*	113
	HS or >	2.54	.528		
Physical activity	< HS	1.91	.481	-2.26*	108
	HS or >	2.16	2.16		
Nutrition	< HS	2.08	.458	-3.01*	99
	HS or >	2.37	.606		
SRAHP total	< HS	2.19	.727	-2.42*	79
	HS or >	2.53	.756		
Exercise	< HS	1.79	.986	-2.29*	80
	HS or >	2.23	1.04		
Nutrition	< HS	1.92	.795	-2.18*	97
	HS or >	2.30	1.03		
Barriers total	< HS	1.40	.710	-2.05*	121
	HS or >	1.77	1.30		

Note: HPLPII = Health-Promoting Lifestyle Profile II; SRAHP = Self-Rated Abilities for Health Practices; [a]Education was coded 0 for < HS = less than high school graduate and 1 for HS or > = high school or greater education, *$p < .05$.

education negatively influences their confidence in their capability to participate in health promoting behaviors. Table 14 also shows the *t*-test results relevant to barriers to health care and educational levels of the women. Women who reported less than high school

education had significantly lower mean scores for barriers to health care than women who reported high school or greater education. The *t*-test for education was significant, $t(121) = -2.05$, $p = .043$. The results indicated that less educated women ($M = 1.40$, $SD = .71$) on an average faced fewer barriers to health care than more educated women ($M = 1.77$, $SD = 1.30$).

Table 15 presents, for the two groups of social and emotional support coded as 0 for “not routinely” and 1 for “routinely” receiving emotional support,“ the results of *t*-test of differences in the mean scores for the HPLPII total and subscales and SRAHP total and subscales. For women who reported not routinely receiving social and emotional support, the mean scores were lower than for women who reported they routinely received social and emotional support for the HPLP II total and the subscales (health responsibility, spiritual growth, interpersonal relations, stress management) and the SRAHP total score and the subscales (psychological well-being and health practices). Women who reported not routinely receiving social and emotional support reported less participation in health promoting behaviors than women who reported routinely receiving social and emotional support. The *t*-test for social and emotional support and feeling capable (SRAHP total) of participating in health promoting behaviors was statistically significant, $t(118) = -2.55$, $p = .012$. Comparison of the means for SRAHP total scores indicated that women who reported little support ($M = 2.26$, $SD = .75$) on an average participated less in health promoting activities than women who reported routinely receiving support ($M = 2.60$, $SD = .71$).

Table 15

Independent t-Tests for Social and Emotional Support by HPLP II, SRAHP, and Barriers to Health Care

Scale	Social & emotional support[a]	*M*	*SD*	*t*	*df*
HPLP II total	Not routinely	2.35	.413	-3.70*	108
	Routinely	2.65	.472		
Health responsibility	Not routinely	2.27	.555	-2.15*	113
	Routinely	2.50	.581		
Spiritual growth	Not routinely	2.76	.569	-4.04*	112
	Routinely	3.20	.608		
Interpersonal relations	Not routinely	2.59	.461	-4.07*	102
	Routinely	2.97	.573		
Stress management	Not routinely	2.33	.542	-3.99*	110
	Routinely	2.75	.605		
SRAHP total	Not routinely	2.26	.755	-2.55*	119
	Routinely	2.60	.712		
Psychological well-being	Not routinely	2.65	.926	-4.45*	122
	Routinely	2.92	.766		
Health practices	Not routinely	2.72	.858	-2.15*	117
	Routinely	3.05	.833		

Note: HPLPII = Health-Promoting Lifestyle Profile II; SRAHP = Self-Rated Abilities for Health Practices; [a]Social and emotional support was recoded 0 for not routinely (“rarely” or “never”) and 1 for routinely (“always,” “usually,” or “sometimes”), *$p < .05$.

Mean scores for barriers to health care for women who report having and not having social support routinely were not statistically significantly different, $t(121) = -1.88$, $p = .062$. However, women who reported not routinely receiving social and emotional support also reported encountering more barriers to health care. Women who reported they routinely received social and emotional support reported they were able to participate in health promoting behaviors and they more often participated in activities to maintain psychological well-being and health than women who report they do not routinely receive support. Women who received social and emotional support were able to avoid some barriers faced by the women with less support.

Other *t*-tests results did not show statistically significant differences between age groups (less than 40 years old or 40 years old or older) and the HPLP II total and subscales, the SRAHP total and subscales, and barriers to health care. There were no significant differences in mean scores between age groups (less than 40 years old or 40 years old or older) and the HPLP II, SRAHP, or barriers to health care.

Research Question #4

What is the relationship between individual characteristics and experiences (age, marital status, education, employment status, number of children, race, barriers to health care, mental health indicators and length of stay in shelter) and health-promoting behaviors of sheltered homeless women?

Pearson's correlation analyses were conducted to determine the relationships between selected socio-demographic and personal factor variables (age, number of children, barriers to health care, mental health indicators) and the HPLP II total scale and 6 subscales (see Table 16). Barriers to health care were negatively correlated with

Table 16

Pearson's Correlation Matrix of Selected Sociodemographic and Personal Factors Variables and HPLP II Total and Subscale Scores

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	1.000										
2. Number of children	.100	1.000									
3. HPLP II total	-.049	.058	1.000								
4. Health responsibility	.018	.143	.797**	1.000							
5. Physical activity	-.018	-.010	.752**	.605**	1.000						
6. Nutrition	.046	.022	.786**	.627**	.624**	1.000					
7. Spiritual growth	-.089	.079	.800**	.461**	.428**	.452**	1.000				
8 Interpersonal relations	-.091	.020	.766**	.518**	.322**	.487**	.725**	1.000			
9. Stress management	-.058	.030	.850**	.571**	.538**	.531**	.781**	.644**	1.000		
10. Barriers to health care	-.248**	-.217*	-.159	-.152	-.061	-.160	-.166	-.144	-.116	1.000	
11. Mental health indicators	.041	-.018	-.195*	.010	-.036	-.264**	-.199*	-.214*	-.239**	.124	1000

*$p \leq .05$, **$p \leq .01$ (2-tailed)

age (r = -.248, $p \leq .01$) and number of children (r = -.217, $p \leq .05$) but were not correlated with any other variable including the HPLP II total scale.

Mental health indicators were negatively correlated with the HPLP II total scale, spiritual growth, and interpersonal relations (r = -.195, -.199, -.214, $p \leq .05$), respectively, and nutrition (r = -.264, $p \leq .01$) and stress management (r = -.239, $p \leq .01$). As expected, the HPLP II total scale and all the subscales were significantly correlated. There were no correlations between age and number of children and no correlations between age, number of children, SRAPH total, and the SRAPH subscales. All the SRAHP total scale and the subscales were positively correlated and statistically significant at $p \leq .01$ (see Table 17).

Table 17

Pearson's Correlation Matrix of Selected Sociodemographic Variables and SRAHP Total and Subscale Scores (N =126)

Variables	1	2	3	4	5	6	7
1. Age	1.000						
2. Number of children	.100	1.000					
3. Psychological well-being	-.091	.021	1.000				
4. Exercise	-.033	.033	.501**	1.000			
5. Nutrition	.091	.087	.440**	.600**	1.000		
6. Health practices	.016	.086	.506**	.471**	.569**	1.000	
7. SRAHP Total	-.011	.068	.763**	.840**	.804**	.777**	1.000

**p $\leq$ .01, (2-tailed).

Pearson's correlation was used to examine the relationships among the total and subscale scores for the SRAHP and the HPLP II (see Table 18). There were significant correlations among all scores of the SRAHP and the HPLP II. The correlations for the subscales ranged from .267 ($p \leq .01$) between interpersonal relations and exercise to .687 ($p \leq .01$) between stress management and psychological well-being. The largest correlation was .740 ($p \leq .01$) for the total scores of the HPLP II and the SRAHP. The positive correlations indicate that the women's perception of their ability to practice health promoting behaviors is related to their self-reported health promoting behaviors.

Prior to computing Spearman's rho correlations, selected nominal variables were recoded to dichotomous (dummy) variables. Race was dichotomized to 0 for nonwhite (African American) and 1 for white (white, Asian, native Hawaiian, American Indian, mixed race). Marital status was recoded to 0 for never married (single, partnered) and 1 for ever married (married, separated, widowed, and divorced). Educational level, employment status, health care coverage, and social and emotional support are ordinal variables and were not recoded to dichotomous variables. Age, barriers to health care, number of children, SRAPH total, and HPLP II total are continuous variables and were not recoded

Spearman's rho (rank-order) correlations were computed to examine relationships between variables of race, marital status, educational level, employment status, healthcare coverage, social and emotional support, and the total and subscale scores of the HPLP II. The results of the correlation analyses presented in Table 19 show 11 of the 42 correlation coefficients between the selected variables and the total and subscales of the HPLP II were statistically significant at $r_s = .198$ or larger ($p \leq .05$ or $p \leq .01$) The correlations between race, marital status, employment status, and health

Table 18

Pearson's Correlations of the Total and Subscale Scores for Self-Rated Abilities for Health Practices Scores and Health-Promoting Lifestyle Profile II (N = 126)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. HPLP II Health Responsibility	1.000											
2. HPLP II Physical Activity	.605	1.000										
3. HPLP II Nutrition	.627	.624	1.000									
4. HPLP II Spiritual Growth	.461	.428	.452	1.000								
5. HPLP II Interpersonal Relations	.518	.322	.487	.725	1.000							
6. HPLP II Stress Management	.571	.538	.531	.781	.644	1.000						
7. HPLP II Total	.797	.752	.786	.800	.766	.850	1.000					
8. SRAHP Psychological Well-being	.459	.428	.494	.659	.572	.687	.692	1.000				
9. SRAHP Exercise	.419	.667	.485	.385	.267	.460	.571	.501	1.000			
10. SRAHP Nutrition	.542	.603	.597	.315	.322	.403	.586	.440	.600	1.000		
11. SRAHP Responsible Health Practices	.516	.369	.385	.437	.341	.440	.518	.506	.471	.569	1.000	
12. SRAHP Total	.598	.661	.612	.560	.463	.623	.740	.763	.840	.804	.777	1.000

Note. All correlations are significant at the $p \leq .01$ level (2-tailed).

care coverage with the HPLP II total scale were not statistically significant. However, there was significant correlations between education level and the HPLP II total scale and social and emotional support and the HPLP II total scale (r_s = .248, $p \leq .01$, r_s = .362, $p \leq .01$, respectively).

There were statistically significant correlations noted between some HPLP II subscales and race, educational level, and social and emotional support. In addition, a significant correlation was noted between race and marital status (r_s = .285, $p \leq .01$) and between race and educational level (r_s = .239, $p \leq .01$). There also was a positive significant correlation between health care coverage and educational level (r_s = .187, $p \leq .05$) and a positive significant correlation between race and interpersonal relations (r_s = .213, $p \leq .05$). In addition, there was a significant relationship (r_s = .325, $p \leq .01$) between educational level and nutrition meaning homeless women who reported being more educated reported eating healthier than women with less education. There were positive significant relationships between social and emotional support and the HPLP II total and subscales, spiritual growth, interpersonal relations, and stress management (r_s =.362, .393, .338, .394, $p \leq .01$), respectively, and health responsibility (r_s =.227, $p < .05$) indicating that having social and emotional support may be beneficial for participation in some health promoting behaviors. There were significant correlations noted between educational level and the HPLP II total (r_s = .248, $p \leq .01$) and the HPLP II subscales nutrition (r_s = .325, $p \leq .01$), spiritual growth (r_s = .250, $p \leq .01$), physical activity (r_s = .198, $p \leq .05$), and stress management (r_s = .210, $p \leq .05$). There were no statistically significant relationships noted between marital status, employment status, and health care coverage with any of the HPLP II scores.

Table 19

Spearman's Rho Correlations of Sociodemographic Characteristics with Total and Subscale Scores of the HPLP II

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Race[a]	1.000	.285**	.239**	-.005	-.103	.035	.173	.078	.151	.035	.213*	.020	.125
2. Marital status[b]		1.000	.005	-.113	.009	-.015	.123	.018	.163	.033	.135	.063	.120
3. Educational level			1.000	.091	.187*	.088	.125	.198*	.325**	.250**	.155	.210*	.248**
4. Employment status				1.000	-.011	.090	.146	.024	.105	.094	.120	.050	.115
5. Health care coverage					1.000	.024	-.011	-.077	.053	-.040	-.047	.003	-.048
6. Social and emotional support						1.000	.227*	.099	.155	.393**	.398**	.394**	.362**

**$p \leq .01$ level, *$p \leq .05$ level (2-tailed).

[a]Recoded "0" nonwhite (African American) and "1" white (white, Asian, Native Hawaiian, American Indian, or mixed race)

[b]Recoded "0" never married (single or partnered) and "1" ever married (married, separated, or divorces)

7. Health Responsibility
8. Physical Activity
9. Nutrition
10. Spiritual Growth
11. Interpersonal Relations
12. Stress Management
13. HPLP II Total

Research Question #5

What is the relationship between sociodemographic variables (age, marital status, education level, number of children, and race) and other variables including health care coverage, homeless history, self-rated health status, social and emotional support, barriers, days of mental health symptoms, self-efficacy (SRAPH), and health promoting behaviors (HPLP II) of sheltered homeless women?

As shown in Table 20, age was significantly positively correlated with marital status (r_s =..358, $p \leq .01$) and negatively correlated with total barriers (r_s = -.211, $p \leq .05$). Marital status was positively correlated with race (r_s = .285, $p \leq .01$) and number of children (r_s =.225, $p \leq .05$). There were positive correlations with educational level and race, SRAHP, and HPLP II (r_s = .239, .271, .248, $p \leq .01$), respectively, and health care coverage (r_s = .187, $p \leq .05$). There was a negative correlated with education level and number of children (r_s = -.232, $p \leq .01$). Health status was positively correlated with scores on the SRAHP total (self-efficacy; r_s = .412, $p \leq .01$) and scores on the HPLP II total (r_s = .433, $p \leq .01$). Health status was negatively correlated with days (1-14 days) of mental health symptoms (r_s = -.315, $p \leq .01$) and barriers to health care (r_s = -.212, $p \leq .05$). Social and emotional support was positively correlated with SRAHP (r_s = .189, $p \leq .05$) and with the HPLP II (r_s = .362, $p \leq .01$). Social and emotional support was negatively correlated barriers to health care (r_s = -.207, $p \leq .05$) and days of mental health symptoms (r_s = -.290, $p \leq .01$). Women who rated their health as good or excellent tended to have higher perceptions that they could carry out behaviors which could lead to better health. With the exception of the moderate significant relationships between age and marital status, health status and self-efficacy, health status and overall health promoting behaviors, and social and emotional support and the overall health

Table 20

Spearman's Rho Correlations between Sociodemographic Characteristics, Health Care Coverage, Homeless History, Health Status, Social and Emotional Support, Barriers, Mental Health Indicators, Self-efficacy (SRAHP), and Health Promoting Behaviors (HPLP II)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1.000	.358**	.027	.075	-.064	-.032	-.091	-.066	.075	-.211*	.047	.027	-.039
2. Marital status[a]		1.000	.005	.285**	.009	-.124	-.015	-.015	.225*	-.167	.003	.048	.120
3. Education level			1.000	.239**	.187*	-.072	.158	.088	-.232**	.052	-.077	.271**	.248**
4. Race[b]				1.000	-.103	-.128	.098	.035	-.083	-.046	.043	.123	.125
5. Health care coverage					1.000	.071	-.031	.024	.084	-.011	.121	-.090	-.048
6. Homeless history						1.000	-.156	.120	-.030	-.011	-.081	-.092	-.052
7. Health status							1.000	.154	.058	-.212*	-.315**	.412**	.433**
8. Social and emotional support								1.000	-.045	-.207*	-.290**	.189*	.362**

* $p \leq .05$ level, ** $p \leq .01$ level (2-tailed).

[a]Recoded "0" never married (single or partnered) and "1" ever married (married, separated, or divorces)

[b]Recoded "0" nonwhite (African American) and "1" white (white, Asian, Native Hawaiian, American Indian, or mixed race)

9. Number of children

10. Barriers to health care

11. Mental health indicators

12. Self-efficacy (SRAPH Total)

13. Health promoting behaviors (HPLP II Total)

promoting behaviors, the findings indicated weak relationships among sociodemographic and personal factors, health status, barriers, social and emotional support. However, there were no statistically significant relationships between homeless history and other variables. Health promoting behaviors of homeless women may be influenced by many individual characteristics (health status, education level, and mental health indicators) as well as behavior-specific cognitions (perceptions of self-efficacy and social and emotional support).

Research Question #6

Among the constructs of behavior specific cognitions (i.e., perceived self-efficacy and social and emotional support) and personal factors (i.e., health status, education level and mental health indicators), which variables contribute the most to the variance explained in the health-promoting behaviors of sheltered homeless women?

Hierarchical multiple linear regression analysis was used to determine relationships and the extent to which independent variables in the Health Promotion Model, individually and collectively, explained the health-promoting behaviors of the study participants. In hierarchical multiple regression, independent variables are entered into the model/equation in a series of steps that is predetermined and controlled by the researcher (Polit & Beck, 2008). Hierarchical regression was used to measure the variance explained in health-promoting behaviors by selected behavior-specific cognitions (i.e., self-efficacy and social and emotional support) and individual characteristics and experiences (e.g., health status, education level and mental health; see Table 21). Social and emotional support was recoded to a dichotomous (dummy) variable for use in the regression model. “Usually” and “always” received social and emotional support were recoded as 1 and “never,” “rarely,” and “sometimes” were

Table 21

Summary of Hierarchical Regression Analysis for Variables Explaining the Health Promoting Lifestyle Profile of Sheltered Homeless Women (N =126)

Descriptive Variables	*b*	*SE*	*B*	*p*
Step 1				
SRAHP Total	.426	.038	.692	.000
Social/emotional support[a]	.155	.058	.167	.008
Step 2				
SRAHP Total	.419	.043	.656	.000
Social/emotional support	.138	.060	.148	.024
Health status[b]	.114	.064	.120	.078
Education level[c]	-.002	.064	-.002	.975
Mental health indicators	.000	.001	-.026	.692
Step 3				
SRAHP Total	.426	.038	.692	.000
Social / emotional support	.155	.058	.167	.008

[a]Recoded ”0” not routinely (“never,” “rarely,” and “sometimes”) and “1” routinely (“usually” and “always”). [b]Recoded “0” fair to poor (“fair” and “poor”) and “1” good to excellent (“good,” “very good,” and “excellent”). [c]Recoded education level to “0” as less than high school (kindergarten and grades 1-11) and “1” for high school or greater (grade 12 and college).

Step 1: $R^2 =$ .558; Adjusted R^2 = .551 $F(2, 121) = 76.51$, $p = < .001$

Step 2: $R^2 =$ .571; Adjusted R^2 = .552 $F(5, 117) = 29.80$, $p = < .001$

Step 3: $R^2 =$ .558; Adjusted R^2 = .551 $F(2, 121) = 76.51$, $p = < .001$

Note. The *F* test in the corrected model row tells you whether your effects, considered together, are statistically significant predictor of the dependent variable.

recoded as 0. Education and health status were also recoded to dichotomous variables. High school or higher educational levels were recoded as 1 and less than high school education was recoded 0. Health ratings of “good,” “very good,” and “excellent” were coded as 1 and health ratings of “fair” and “poor” were coded as 0. Only variables that were significantly correlated with the HPLP II total scale were placed in the regression model. Variables were added to the regression equation in blocks for analysis. The first block included behavior-specific cognition variables and the second block included individual characteristics and personal experiences.

In Step 1, the HPLP II total scale was regressed on behavior-specific cognition variables that were significantly correlated with it (i.e., SRAHP total and social and emotional support). The relative weight of self-rated abilities for health practices was significant (β = .692, $p \leq .000$) as well as social and emotional support (β = .167, $p \leq$ .008). The variance in health promoting behaviors explained by self-efficacy and social and emotional support was 55.1%.

In Step 2, mental health indicators, education level, and health status were added to the equation. The regression analysis revealed a very small increase to 55.2% in the total variance explained in health promoting behaviors by the five variables. Mental health indicators (β = -.026, p = .692), education level (β = -.002, p = .975), and health status (β = .120, p = .078) did not have a statistically significant influence on health promoting lifestyle behaviors, while the association of self-rated abilities for health practices remained large and significant (β = .656, $p \leq .000$). Social and emotional health was also significant (β = .148, p = .024).

In Step 3, mental health indicators, education level, and health status were eliminated from the equation. Eliminating the three variables from the regression

analysis revealed a decrease from 55.2% to 55.1% of the total variance explained in health promoting behaviors. The association of self-efficacy increased (β = .692, $p \leq$ .000) as well as social and emotional support (β = .167, p = .008). The total variance explained in health promoting behaviors by self-efficacy, social and emotional support decreased from 55.2% to 55.1%. From a statistical perspective, the final regression equation revealed self-efficacy and social and emotional support as significant health promotion behavior predictors (R^2 = .558; adjusted R^2 = .551). Self-efficacy explained the most variance in health promotion behaviors of these sheltered homeless women, and additional variance was explained by the social and emotional support variable.

CHAPTER V

DISCUSSION

The purpose of this study was to describe the individual characteristics and experiences (sociodemographic, health status, health practices), behavior specific cognitions (social and emotional support, homeless history, veteran status, barriers to health care, and self-efficacy), and health-promoting behaviors of sheltered homeless women. Relationships between selected variables (the relationship between sociodemographic characteristics and health promotion behaviors and self-efficacy and health-promoting behaviors in this population) were examined. A discussion of the findings of this study is presented in this chapter and compared with prior research of sheltered homeless women. The efficacy of the HPM in describing health promoting behaviors of sheltered homeless women will be discussed. A summary of limitations associated with the study, implications of study findings for nursing practice, and recommendations for further research are also discussed.

Findings

Individual Characteristics and Experiences

Socio-cultural. The racial composition of the sheltered women in this study was somewhat different than those reported by North Carolina census data in 2006. North Carolina census data revealed that from a total population of 8,856,505 people, women composed 51% of the state's population. African American women composed 21.6% of women in North Carolina, while in the present study African American women

represented 54.0% of the women in the sample. Therefore, there was over twice the number of African American women represented in this sheltered homeless women

sample than in the total population of African American women in North Carolina. Other research studies have revealed similar findings that African American women were highly represented in the homeless population (Lewis et al, 2003, Nyamathi, Leake et al., 2000 Rosengard et al., 2001; Smith, 2005; Wilson, 2005). Compared with all U.S. adults in 1996, homeless clients are disproportionately Black non-Hispanics (11% versus 40% white; U.S. Department of Housing and Urban Development [HUD], 1999). In this study, race and ethnicity of the women varied by shelter. This result is supported by findings from a large study that included New York City, Chicago, San Francisco, and Los Angeles, where racial and ethnic variability depended on each individual shelter (Barrow, Rodríguez, & Córdova, 2004).

Few women in this sample were married, most reported being single and never married or divorced. This finding is similar to national statistics of homeless persons that revealed of the 52% who were married at one time, most had divorced (HUD, 1999). Additionally, like the national statistics, the women in this study were less likely to have never married (39.7% versus 41% nationally). Homeless women who reported never being married (single or never married groups) or divorced were represented in larger numbers compared to all U.S. and North Carolina women 15 years and older at 23.7% and 23.4%, respectively (U.S. Census, 2006).

Many homeless persons lack educational and financial resources. In this study, slightly less than one third of the women had completed high school, slightly less than one third were high-school graduates or had a General Equivalency Diploma (GED) and more than a third were educated beyond high school. These women were more educated at the high school level when compared to Wilson's (2005) findings that revealed that 26% of the women graduated from high school. However, they were less

educated overall than women in Wilson's study. In her study over half (51.4%) were educated beyond high school. Comparing the women in this study to the U.S. Census (2000), there were higher percentages reported for U.S. and NC residents completing high school, (80.4 % and 78.1%, respectively) and completing bachelor's degree or higher (24.4% and 22.5%, respectively) than the sheltered homeless women. Educational attainment varied between studies and may be affected by shelter location (e.g., rural versus urban).

Job loss and unemployment and the lack of affordable housing are well-established contributing factors to homelessness (Homeless Resource Center, ND; NCH, 2007a). Most of the women in this study reported being unemployed. Some women reported being unemployed for less than a year while others reported being unemployed for more than a year. Many of the women reported they were physically unable to work (e.g., need surgery, lack of energy, chronic tiredness, physically disabled from rheumatoid arthritis, unable to get medications) and others reported mental health issues (depression, anxiety, substance addiction) as a deterrent to employment. Another study of sheltered homeless women revealed similar results in that 80.3% of the women were unemployed (Wilson, 2005). The U.S. Census Bureau (2007) reported the number of persons age five or older with disabilities for US and NC (i.e., 15.1% and 16.8 %, respectively). This prevalence of disability was much lower than disability reported by the homeless women in this study. In this study, the reported disabilities were not examined to determine if the disabilities were the cause of homelessness or if homelessness caused the disability.

More African American women than whites and others reported currently working full or part time. The women who worked earned wages below the poverty threshold and

reported they were unable to make enough money to secure a deposit for housing or pay rent. Insufficient education or employment skills are disadvantages encountered by homeless women when trying to achieve employment and a livable wage (The American College of Obstetricians & Gynecologists, 2005; NCHC, 2004). Thus, it should not be surprising that the income of this sample of homeless women was below the US and NC poverty threshold.

Prior related behaviors. The women in this study reported that public clinics and hospital emergency rooms were their major sources for healthcare. This is similar to findings for use of shelter and outreach clinics in Los Angeles for homeless women (Swanson, Andersen, & Gelberg, 2003) and emergency departments by homeless women in New York City (Padgett, Struening, Andrews, & Pittman, 1995). Some women in the present study had available an on-site clinic, Shelter Health Services, that provides free health care to women and children living in the Salvation Army's 200-bed shelter. In 2007, the clinic provided 3,415 client visits, providing services to 816 individuals (K. Bennett, personal communication, on July, 2006). Another on-site clinic in this study, at the Healing Place for Women, provided 492 patient visits in 2007 for women who were engaged in the agency's program for homeless women (K. Thomas, personal communication, on July, 2008). More than a fourth of the women also reported they received health care at doctors' offices. When health services were not available on site for the women, referrals to other healthcare agencies occurred. One such agency, Horizon Health Care, provides healthcare for families and individuals of all ages who are homeless.

Even though some women reported that they were employed, they reported they could not pay the premiums for private health insurance or pay for care from private

providers. Many of the women reported no health insurance coverage and over half reported not being able to see a doctor in the past year because of cost. Other studies (ACOG, 2005: Cheung & Hwang, 2004; Lewis et al., 2003; NCH, 2008) support that the need for health care of homeless women goes unmet. Lewis and colleagues (2003) found tha having a regular source of healthcare was more important than health insurance in lowering the odds of unmet need. Wilson (2005) found access to health care was better coordinated in the geographical area represented in her study. Twenty percent of the women in Wilson's study reported no barrier to health care and a high percentage had received preventive care (Pap teat and medical care) in the past two years. In the present study, similar findings were revealed for no barriers to health care and dental visits; however, the women reported higher preventive care activities (mammography, Pap test, and vision care) and less participation in medical visits than Wilson's study.

The use of preventive services is one indicator of adequate health care. The Preventive Services Task Force (USDHHS, 2008) has suggested that women over age 40 have a mammogram every two years, Pap test every 1-3 years if sexually active or between the ages of 21-65, blood pressure check every two years, and bone density test beginning at age 65. The low rate of mammograms in the present study may be related to the number of women who were under 40 years old. Women who have Medicare coverage can receive many of the recommended screening preventive services (USDHSS, 2008), but few women in the present study reported having Medicare or any other insurance coverage. Also, women who are single do not quality for Medicaid and those that do may lose it once they are employed (NHCHC, 2000). While living in the shelters used in this study, the women received health care at the on-site clinics or were

referred to free clinics in the geographical location of the shelter. In addition, North Carolina has 74 free clinics, more free clinics than any other state that provides care at little to no cost to low-income, uninsured or underinsured persons (N.C. Association of Free Clinic, 2007). Therefore, educating the women about the need for preventive services and where they can go to seek healthcare treatment is essential to increasing health-promoting behaviors.

The majority of the homeless women reported cigarette smoking every day and a small number reported smoking some days. However, percentages were less than women nationally who smoked every day (57.9% vs. 81.3% nationally) and smoked some days (9.5% vs. 18.7% nationally) (CDC, 2005). In this study, more African American women than whites reported smoking every day. This finding contradicts NC statistics which revealed whites smoke more than African Americans (CDC, 2004). Smoking has been related to increased respiratory and cardiovascular illnesses; the two most frequently reported physical conditions reported by the women in the shelter (Braganza, Chaudhuri, & Thomson, 2008; Schrop et al., 2006). Because over half of the women in this study reported being diagnosed with depression and slightly less than half being diagnosed with anxiety disorder, the women may use cigarette smoking to treat psychological and emotional distress. Nicotine, a psychoactive drug, is both a stimulant and a depressant and cigarette smoking may be a diversion to help change moods of these homeless women. Thus, social/psychological support groups and smoking cessation programs need to be more readily available to assist women who are ready to decrease tobacco dependence and the negative effects of cigarette smoking.

Biological / health status. Homelessness increases the risk of having health problems (O'Connell, 2004). In this study more than half the women reported their health

as good to excellent. However, results of a statewide telephone survey (NC BRFSS, 2007) revealed a larger proportion (80.9%, *n* = 7245) of women in North Carolina reporting their health as good or better (CDC, 2007). In this study, the most frequently identified physical health issue was hypertension, followed by asthma, arthritis, and STDs. These findings are consistent with findings of other studies (Craft-Rosenberg, Powell, & Culp, 2000; Hwang, 2001; Hwang et al., 1998). In contrast, other studies revealed that asthma was identified more frequently than hypertension as the primary physical health issue (Weinreb, Goldberg, & Perloff, 1998; Schrop et al., 2006; Wilson, 2005),

As reported in other studies of homeless women, many of the women in this study reported relatively high rates of STDs. Previous studies reported that some homeless women engage in economic survival strategies that increase their risk for STDs. They may also engage in survival sex or trade sex for drugs, shelter, or protection (Lewis et al., 2003; Nyamathi et al., 2000; Nyamathi, Stein, & Swanson, 2000; Schaffer et al., 2000; Wenzel, Koegel, & Gelberg, 2000; Witte, Wada, El-Bassel, Gilbert, & Wallace, 2000). The reasons for the high prevalence of STDs were not explored in this study. Therefore, it is unclear why these homeless women engaged in high-risk sexual activities. Regardless of the reasons for high-risk activities, STD screening and prevention efforts should be tailored to the needs of homeless women.

Psychosocial factors. Chronic stress has a negative effect on physical and mental health, and homelessness is a stressful situation for all who are homeless, especially for women (Klitzing, 2004; Thrasher & Mowbray, 1995). Mental health problems have been reported to be greater in homeless women than in the general population (Cheung & Hwang, 2004; Robertson & Winkleby, 1996; Tam, Zlotnich, &

Bradley, 2008). The present study revealed that the women experienced many days of mental health distress. More than half the women reported that they had been diagnosed with a depressive disorder, and nearly half reported being diagnosed with an anxiety disorder. These numbers were higher than those identified in the National Survey of Homeless Assistance Providers and Clients (NSHAPC; U.S. Census Bureau, 2001) that revealed 39% of homeless clients reporting indicators of mental health problems. The estimated women aged 18 years and older with mental health distress in the US was 3.4% of the general population (CDC, 2008). Thus, homeless women in both the US and in this study reported much higher rates of mental distress.

Studies have revealed that treating symptoms of depression and other mood disorders among homeless individual was associated with higher quality of life (Lam & Rosenheck, 2000; Sleath et al., 2006). However, other studies have shown that homeless women may not seek mental health treatment because of their lack of acknowledgement of mental health problems, perceived needs that may be more pressing to them than seeking mental health services, or lack of realization that they could benefit from mental health services (Robertson & Winkleby, 1996; Sleath et al., 2006). Mental health issues of homeless women need to be addressed, given the high prevalence of depression in this population (Lam & Rosenheck, 2000; Robertson & Winkleby, 1996; Sleath, et al., 2006).

Interpersonal influences. In contrast to findings of other studies (Banyard & Graham-Bermann, 1998; Goodman, 2006; Klitzing, 2003; Lewis et al., 2003; McChesney, 1995; Nyamathi, Wenzel, Keenan, Leake, & Belberg, 1999) where homeless women feel isolated, alone, and cut-off from family and friends, the women in the present study felt they had social and emotional support. Research has shown that

social support improved physical and mental health while lack of social support has a negative effect on health. Klitzing (2003), in a qualitative study of homeless women living in temporary shelters, found that the coping strategy most often used by the women to meet social and emotional needs was being with other women in the shelter, friends, family, or staff. Women who report few or no social support may be individuals who have drained the limited support they had from others by having stayed too often with friends and relatives who have few resources of their own (Goodman, 2006; Nyamathi, Bennett, Leake, & Chen, 1995; Toohey, Shinn, & Weitzman, 2004). However, Wilson (2005) suggested that race/ethnicity and unemployment negatively impacted the social support system of African American women in her study. Other studies have revealed inconsistent findings about the relationship between social support and homelessness (ACOG, 2005; Aday, 2001; Banyard, 1995; Banyard & Graham-Bermann, 1998; Hatton, 2001). These studies revealed that tenuous relationships put the women at high risk for sexual/physical abuse or violence, drug abuse, HIV/AIDS transmission, or criminal activities. Relationships with social support persons are complex and may have either positive or negative outcomes for the homeless women.

Situational Influences. Substance abuse, loss of job and eviction, and relationship conflicts were the most frequently reported reasons for homelessness at the present time among the participants in this study. Emotional or mental illness was reported infrequently as the reason for present homelessness. The living arrangements prior to coming to the shelter were mainly identified as living with family and friends or in their own apartment or house. More than half the women reported a previous history of homelessness. Homeless persons experiencing intermittent homelessness have been described as (a) persons with low income, and low educational attainment who lack a

secure home due to abuse or other negative reasons or (2) single, head-of-household females trying to make ends meet (King et al., 2006, Metraux & Culhane, 1999; Tessler, Rosenheck, & Gamache, 2001). Many of the women's parents and circle of friends were low-income and lacked the resources needed to support the homeless woman (Williams, 1998; Wehler et al., 2004). The prevalence of childhood foster care in this study was less than reported by Wilson (2005) who found 21.2% of the women in her study reported a history of childhood foster care. Studies revealed homeless people with a history of foster care were more likely than other people to have their own children in foster care (Metraux & Colhane, 1999; Roman & Wolfe, 1995). Foster care placement and substance abuse by the primary female caretaker during childhood were found to be risk factors for homelessness (Bassuk et al., 1997; Bassuk, Dawson, Perloff, & Weinreb, 2001). In contrast to findings of other researchers, none of the women in the present study who reported being raised in foster care reported their children being raised in foster care; however, their children were reported to be in some unofficial placement such as living with family and friends.

Behavior-Specific Cognition

Barriers to health care. Homeless women encounter many barriers to health care and preventive services (Lewis et al., 2003). The barriers to health services reported by the women in this study included lack of money, lack of health insurance, lack of transportation, and to a lesser degree lack of information on where to go for health care. These findings were similar to findings from other studies that revealed lack of money, health insurance, transportation, and uncertainty of knowing where to go as barriers to health care for homeless women (Gelberg et al., 1996, Lim, Andersen, Leake, Cummingham, & Gelberg, 2002; Khanna, Singh, Nemil, Best, & Ellis, 1992; Rosenheck

& Lam, 1997; Weinreb et al., 1998). In addition, studies revealed other barriers to health care for homeless women such as no child care, too busy with other things, long wait at appointments, and depression. More women in the present study reported they were sure of where to go for health care than those reported in other studies (Lewis et al., 2003; Schrop et al., 2006; Weinreb et al., 1998).

Self-efficacy. Perceived self-efficacy was defined in this study as the judgment of the women about their ability to perform health practices necessary to achieve or maintain health. Women who reported their health status as good to excellent perceived they were more able to perform various health practices than women who reported poorer health. Results indicated that overall many of the women perceived themselves as somewhat able to perform various health practices within the context of being homeless and living in a shelter. The women scored highest on responsible health practices that required the women to advocate for themselves. Advocating for self included seeking health information for self care, being proactive in watching for negative changes in their body, and recognizing what symptoms needed to be reported to healthcare professionals. The women perceived they knew their rights as healthcare consumers and felt they would stand up for themselves or get help from others as needed. In contrast, the women in this study did not judge themselves as able to participate in a regular exercise program. The homeless women reported barriers to exercise such as lack of time, energy, motivation, and access to exercise equipment as reasons for poor participation in exercise. Additionally, they reported lack of a safe place to exercise or walk because often the shelters were located in unsafe areas. This finding is similar to the findings of other researchers who have studied exercise behaviors of homeless women or women with low-income (Kirchhoff, Elliott, Schlichting, & Chin,

2008; Nies et al., 2003; Nies et al., 2006; Rosengard et al., 2001; Schrop et al., 2006; Stutts, 2002). Most homeless women do not own cars and as a result they do a great deal of walking/trudging during a normal day. Thus, the homeless women in this study may not have associated walking as a form of regular exercise.

The women in this study also reported they were not able to eat balanced, nutritious meals. They reported they had little control in finding healthy foods, eating a balanced diet, or have access to food labels for reading nutritional contents. Homeless women in general make difficult decisions about using their scarce resources and often forego nutritious, balanced meals. Food for the shelters may come from many sources. For example, in Wake County, NC, the Inter-Faith Food Shuttle picks up unserved food from restaurants, hospitals, groceries stores, and the North Carolina Farmers' Market and distributes the food to shelters (Inter-Faith Food Shuttle, 2008). The Food Bank of North Carolina is another source of food for shelters in central NC. Some shelters are eligible for Federal funds if they serve meals to children or people with disabilities and meet Federal nutritional guidelines (U.S. Department of Agriculture, 2008). Two of the three shelters use Federal funds as a source to supplement their food budgets.

In addition to the relationship between self-efficacy and exercise and nutrition, other studies revealed that homeless adults with low self-efficacy were more likely to remain in shelters, while individuals with high self-efficacy more actively pursued employment and housing and remained at shelters for a shorter duration (Epel, Bandura, & Zimbardo, 1999; Wenzel, 2006). Conversely, other studies revealed homeless women perceived themselves as generally quite capable of meeting life's demands and participating in health promoting activities (Guarnaccia & Henderson, 2006; Hogenmiller et al., 2007; Nyamathi et al., 2000; Smith, 2005). In the present study, self-efficacy was

found to have a strong association with the women's practice of health promotion behaviors. The results revealed that there was a positive relationship between self-efficacy and each of the components of a healthy lifestyle (health responsibilities, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management). Self-efficacy was the most important explanatory variable of overall health promoting behaviors. Though the relationships in this study do not establish causality, in Pender's (1996) HPM, self-efficacy is viewed as a behavioral specific cognition and influences a commitment to engage in health promoting behaviors as well as directly promotes greater participation in health promoting behaviors. Findings from this study support one of the basic tenets of the model that self-efficacy influences health promoting behaviors (Pender et al., 2006). Wilson's (2005) study did not address self-efficacy of women living in shelters.

Behavioral Outcome

Health promoting behaviors. The HPLP II was used in the present study to assess the frequency that homeless women living in three shelters reported they engaged in personal health promoting habits (e.g., physical activity, nutrition, health responsibility, stress management, interpersonal relations, and spiritual growth). The women reported "sometimes" or "often" participating in health promoting behaviors. The results revealed that the mean scores of the homeless women living in shelters were above the mid-point for the measure. They scored lowest on the health behaviors ("physical activity," "nutrition habits," and "health responsibility") and higher on psychological well-being ("spiritual growth," "interpersonal relations" and "stress management"). Health-promoting lifestyle behaviors of the homeless women living in shelters in this study tended to be similar to those reported by Wilson (2005).

Examining the HPLP II subscales for the women in this study, physical activity was the lowest score, which is consistent with findings of other studies (Carreno et al. 2006; Chilton et al., 2006; Pullen et al., 2001; Walker et al., 2006; Wilson, 2005). In the present study, qualitative findings revealed some of the women reported environmental barriers (e.g., “lack of safe place” and “no gym or recreational center nearby”) as reasons for not participating in physical activity which is consistent with findings from other researchers (Glanz, Rimer, & Lewis, 2002; Powell, Slater, Chaloupka, & Harper, 2006). Additional barriers reported by the women that prevented them from participating in physical activity included physical health problems (e.g., “hip and knee and back problems,” “need surgery to repair my hernia,” “lupus,” and “asthma”), lack of time (e.g., “sometimes my schedule is to busy”), and lack of motivation (e.g., “lack of interest,” “lack of will,” “lack of self interest”). Other studies revealed that environmental factors or barriers that influenced participation in physical activities of homeless women included access to physical activity programs and program costs, transportation, childcare, physical safety, injuries and/or illnesses, social support from peers and family, and climate and seasonal factors (Bassuk et al., 1996; Glanz et al., 2002, Humpel, Owen, & Leslie, 2002; Klitzing, 2004; Nies & Matyko, 2006). The BRFSS revealed that merely 44% of the females in North Carolina and 47.2% and 46.1%, respectively, of women in Wake and Mecklenburg counties met physical activities recommendations of healthy living (CDC, 2007). A physical activity that women who are homeless spend much of their time doing is walking and the women may not recognize walking as a form of physical activity. Thus, they may have underreported walking as a health promoting activity. Studies have revealed numerous benefits of walking for improving cardiovascular, muscular, and respiratory fitness (Ball, Crawford, & Warren, 2004; Brown et al., 2003;

Gettleman & Winkleby, 2000; Manson et al., 2002; Nies & Matydo, 2006; Nies et al., 2003). Introducing the women to the benefits of walking as a low impact exercise and one form of physical activity that requires little to no money or special equipment could be a way to increase physical activity in this population. In addition, providing planned exercise classes and access to exercise equipment in a safe environment such as in the shelter, might encourage the women to participate more in physical activities.

Scores on the nutrition subscale were the second lowest of the six subscales. Homeless women have limited access to nutritious meals. Most meals served in shelters include foods provided from private donations, a local food bank, and surplus commodity distributions. Often meals served in shelters do not allow choices of low-fat foods and the food intake has been found to be inadequate for most nutrients (Alley, Macnee, Aurora, Alley, & Hollifield, 1998; Cheung & Hwang, 2004; Heslin, 2004; Heslin, Andersen, & Gelberg, 2003; Nyamathi et al., 2000; Oliveira & Goldberg, 2002; Wilson, 2005). The availability of fruits, vegetables, dairy products, and whole grains are very limited in meals offered to homeless persons. Foods are often high in saturated fats and simple carbohydrates (Craft-Rosenberg et al., 2000; Johnson & McCool, 2003; Richards & Smith, 2006; Tse & Tarasuk, 2008, Wilson, 2005). It is not surprising that homeless women suffer medical problems due to under-nutrition that include anemia, dental problems, gastrointestinal complaints, cardiovascular disease, hypertension, hypercholesterolemia, diabetes, and malnutrition (Alley et al, 1998; Johnson & McCool, 2003; Nyamathi et al., 2000). In addition to food insufficiency and poor physical health, other factors associated with under-nutrition and hunger includes poor mental health (e.g., depression, anxiety, emotional distress, and sleep disorders), substance abuse, and partner violence (Wehler et al., 2004).

Although meals in the shelters may not be nutritionally adequate, studies have revealed that homeless women who live in shelters have a better overall nutrition status than unsheltered women or women living in motels or hotels that are used as “overflow shelters” (Oliveira & Goldberg, 2002; Richards & Smith, 2006): Another source to supplement nutrition availability is the Food Stamp Program which provides coupons for low-income families that enable them to buy food. The coupons are dispersed on a monthly basis, with the purpose of reducing hunger and malnutrition (Food Research and Action Center, ND; Richards & Smith, 2006; USDA, 2008; Wehler et al., 2006). Homeless women who are eligible for food stamps may not know they are eligible thereby missing opportunities to take advantage of decreased food expenditures and increased access to high-quality food versus fast food or low quality food (e.g., luncheon meats, crackers) bought at convenient stores. However, homeless women can be taught to take an active role in learning how to choose healthy foods from foods provided at the shelters.

In addition to inadequate nutritious foods for homeless women, the women in the present study reported lack of knowledge about nutrition. Although the women reported barriers to healthy eating, providing support and guidance on choosing fruits, vegetables, dairy products, and grains whenever possible is needed to promote their health. Additionally, education about limiting foods high in saturated fats and sugar and taking an active role in improving and maintaining their health status will empower the women to make healthy food choices. Other ways to encourage the women to promote healthy nutritional lifestyle changes include reading or watching television programs that support healthy diets, reading food labels especially when buying fast foods, and learning to access supportive food programs. Reducing hunger and under-nutrition and

its adverse health consequences requires many strategies at local, state, and national levels.

Health responsibility is taking charge of one's own health, educating oneself about one's health condition, and participating in lifestyle changes that not only prevent diseases but also encourage health promotion behaviors. Establishing and actively participating in a planned exercise program, taking an active role in inspecting one's body for unusual signs and symptoms, and attending educational classes on personal health care are ways that the women can take personal health responsibility. More than half the women in this study reported participating in preventive health activities such as having a Pap test, mammogram, and routine health check-ups. Alley et al. (1998) revealed that homeless women take an active role in seeking solutions to their problems and may pursue health promotion activities that have been valued in the past during their time of homelessness. Other studies revealed that sheltered women have increased risk factors for cervical dysplasia and cancer (e.g. smoking, unprotected sex, multiple partners) (Chau et al., 2002; Hogenmiller et al., 2007) and participate less frequently (52% in past two years) with Pap test compared to 79% of their housed counterparts (CDC, 2006). Although a large percentage of women in the present study and in Wilson's (2005) study reported participating in cancer screening tests, other studies of sheltered homeless women revealed lower cancer screening rates compounded by higher cancer risk factors (Chau et al., 2002; Long et al., 1998). Therefore, this vulnerable group of women could benefit from cancer prevention education and increased access to cancer screening services.

Stress is a physical, mental, and emotional response to the various demands, changes, and events in one's life. Stress can seriously damage physical health,

psychological well-being, and relationships with friends, family, and coworkers. In this study, stress is defined as a condition of emotional tension or anxiety arising from unmet needs (i.e., lack of food, rest, sense of security, affections) and environmental events (i.e., homelessness, domestic violence, unemployment) that is perceived as threatening (Pender et al., 2006). Literature reveals that homelessness is a stressful situation for all people including women (Banyard, 1995; Humphrey et al., 2001; Klitzing, 2004; Thrasher & Mowbray, 1995).

Researchers have reported that homeless women who encounter stress on a daily basis may resort to maladaptive coping skills such as eating poorly, smoking, and substance abuse (Alley, 1998; Anderson & Riley, 2008). These negative coping skills may lead to negative health conditions. Others may utilize previous positive coping skills and/or develop positive stress management strategies to cope with the stress of being homeless. Managing stress may involve making changes in external factors and in internal factors. Stress management strategies include getting plenty of rest and adequate nutrition, spending time with others, and sharing experiences, alternating exercise with rest, developing and maintaining as normal a schedule as possible, keeping a journal, maintaining positive relationships with family and friends, and engaging in activities that are positive for the spirit, body, and mind (Alley, 1998; Anderson & Riley, 2008; Banyard, &Graham-Bermann, 1998; Mokdad, Marks, Stroup, & Gerberding, 2004; Murray, Yakimo, & Baier, 2008; Powell et al., 2006).

Findings from this study revealed that the majority of the homeless women living in shelters reported that they believed they were able to engage in activities to maintain psychological well-being. Conversely, the majority reported that they did not often participate in stress management activities (e.g., getting adequate sleep and rest, using

specific techniques of meditation and relaxation). However a majority of the women also reported they were able to concentrate on pleasant thoughts at bedtime and were able to accept the things they were not able to change. These findings are similar to Wilson's (2005) findings. For both studies, the highest mean scores in stress management were concentrating on pleasant thoughts and accepting things the women could not change. Stress management may also include social and emotional support from others and healthy life skills groups that focus on getting and keeping a job and an apartment, budgeting, parenting skills, and stress management to aid healthy decision-making. Findings suggest that women living in shelters may benefit from stress management education and relaxation exercises provided in the shelters as well as education in life skills that can provide them with the necessities for being employed and making good economic decisions.

Interpersonal relations deal with the maintenance of relationships involving a sense of belonging, a need for companionship, and a need for intimacy and closeness (Lee & Loke, 2005). The women in the present study scored slightly above the midpoint on all items of the interpersonal relations subscale of the HPLP II except for the item that asked about finding ways to meet their need for intimacy. On the intimacy item, the women scored below the midpoint. The women's scores indicated they tended to praise other people, show concern for others, feel they touched others, and maintain meaningful and fulfilling relationships with others. Although the women were in crisis from being homeless, findings indicated they saw beyond their personal situation and were thoughtful and caring of others. The women reported they spent time with close friends and received support from their network of caring people as well as discussed problems and settled conflict through discussion and compromise.

These findings are congruent with past research. Constructive social support and interpersonal relations have been found to be positively related to health and health promoting behaviors (Pender, 1996) and to buffer the negative effects of homelessness (Klitzing, 2004, Tessler et al., 2001). Some women were unsure about the meaning of intimacy and interpreted the meaning as sexual relations. Many homeless shelters provide communal living services for same sex residents and therefore discourage stable heterosexual relationships. Research reveals that some homeless women engage in survival sex for money, goods (food, clothing, shelter, medicine, or drugs), protection while on the street, and transportation (Wenzel, Leake, & Gelberg, 2001). Other researchers reported that homeless women who engage in survival sex were more likely to experience sexual assault and violence than homeless women who did not participate in survival sex (El Bassel, Witte, Wada, Gilbert, & Wallace, 2001). Homelessness, substance use, mental illness, and violence are barriers that may make it almost impossible for homeless women to form safe or stable intimate relationships (Wenzel et al., 2001). Consequently, barriers in social support systems contribute to difficulty in building trusting relationships and impede health promoting behavior changes. Researchers have long recognized that a supportive person can provide encouragement in health promoting behaviors (Adams et al., 2000; Goodman, 2006; Nyamathi et al., 1995; Tessler et al., 2001; Wenzel et al., 2001). Similar to the findings of Wilson's (2005) study, the findings of the present study revealed that the homeless sheltered women utilized their personal strengths and resources to maintain interpersonal relations.

Researchers have reported a positive relationship between spirituality, physical health, and psychological-well being. Spirituality may serve as an effective coping strategy used by homeless sheltered women to enhance psychological well being by

reducing distress and promote physical health by choosing a healthy lifestyle (Callaghan, 2003; Douglas, Jimenez, Lin, & Frisman, 2008; Eason & Quinn, 2006; Humphreys, 2004; Humphreys et al., 2001; Wilson, 2005). Spirituality often implies and expresses a sense of meaning, purpose, or power, either from within or from a transcendent source (Eason & Quinn, 2006). Spirituality may encompass religion but is not defined by one's own religion (Tanyi, 2002). It connotes the inner resources or beliefs of a person, a way of interpreting life events, and a source of hope, joy, comfort, peace, love, and connection, (Anandarajah & Hight, 2001; O'Reilly, 2004; Pender, 1996). It refers to a sense of connections with self, others, and higher powers, and being able to articulate some purpose in life greater than self (Pender, 1996). Spiritual growth refers to emotional growth and relates to the insights of the women into their personal existence and the relationships of the adverse conditions of homelessness.

In the present study spiritual growth included attaining self-actualization and fulfillment (Lee & Loke, 2005; Pender et al., 2006). The homeless sheltered women in the present study scored highest on the spiritual growth subscale with the mean score substantially above the midpoint of the instrument. Similar findings of the positive role that spiritual growth played in health and health promoting behaviors across the lifespan have been reported (Callaghan, 2003, 2005; Lee & Loke, 2005; Wilson, 2005). Many of the women reported they looked forward to the future, believed that life has a purpose, recognized what is important in life, and felt connected to a force greater than themselves, characterizing the spiritual growth in their daily activities. In addition, the women reported they were working toward long term goals, being exposed to new experiences and challenges, and changing in positive ways. Although the score

remained well above the midpoint, the women score the lowest on feeling content and at peace with self.

The findings are similar to Wilson's (2005) findings which revealed that homeless women may feel content and at peace with themselves but they are not content with being homeless and living in a shelter. Studies of homeless veterans revealed spiritual well-being improved interpersonal relations and were positively related to a decrease in the frequency of readmission to homeless shelters (Benda & Belcher, 2006; Benda, DiBlasio, & Pope, 2006). Nurses can support the women's spiritual growth by exploring the meanings that the present life situation has on health and health promoting behaviors.

Efficacy of the HPM

Pender's HPM provided an appropriate framework to examine health-promoting behaviors of homeless women living in shelters. The three major constructs of the HPM (individual characteristics and experiences, behavior-specific cognition and affect, and behavioral outcome) were used to select the variables for this study. Socio-demographic and personal factors were described by exploring prior related behaviors (location of health care, smoking history, preventive health care) and personal factors which included biological, psychological, and socio-cultural factors. Biological factors included age, physical health, and health status. Psychological factors included mental health indicators and diagnoses of mood disorders. Socio-cultural factors included race/ethnicity, marital status, education, number of children, employment status, health care coverage, and prior related behaviors (location of health care, smoking history, preventive health care). Interpersonal influences included emotional and social support. Situational influences included homeless history (reason for homelessness, living

arrangements prior to shelter, prior homelessness, and foster care as a child). Veteran status was not examined because so few women reported having served on active duty in the US Armed Forces.

Behavior-specific cognitions and affect were explored through barriers to health care and self-rated abilities for health practices. The SRAHP was used to assess self-rated abilities for health practices, and this study provided more evidence that the SRAHP is a valid and reliable measure for the construct. Health promoting behavior was the outcome concept for the HPM and was explored using the HPLP II, which was found in this study to be a valid and reliable measure for the construct. Using consistent valid and reliable measures for model constructs standardizes comparisons of aggregates and vulnerable populations and promotes meta-analyses of data to advance the science of health promotion.

Implications for Nursing Practice

Self-efficacy has a strong influence on the health-promoting behaviors of homeless women living in shelters. In order to develop, implement and evaluate culturally competent health promoting interventions, it is important to assess and describe health promoting lifestyle behaviors of sheltered homeless women. Awareness of behavioral risk factors that affect quality of life will be helpful in planning health programs that focus on lifestyle changes. Few studies have developed and tested behavior change interventions that promote lifestyle changes for homeless women living in shelters. In the present study, the women reported regular cigarette smoking, poor diet, and lack of physical activities, which are behavioral risk factors that have been found to play a major role in premature morbidity and mortality (USDHHS, 2008).

Studies revealed that while smoking remained the leading cause of preventable deaths (18.8% of all deaths in 2004), poor diet and lack of physical activity were a close second at 16.6% and were increasing yearly (Craft-Rosenberg, 2000; Mokdad et al., 2004). Smoking and eating may be behaviors used to deal with the stress of being homeless.

Programs for homeless women that promote healthy life styles should focus on changeable or modifiable behaviors such as healthy eating patterns, physical activity, and smoking cessation. Lifestyle interventions have been shown to help maintain and promote physical health and psychological well being (Murray et al., 2008). Healthy lifestyle programs have been found to be more effective if they are personally tailored based on age, race or cultural group, health status, economics, and living arrangements (Bagwell & Bush, 2000; Orleans & Cassidy, 2005). They stress that individually tailored programs should address the women's personal health practices and lifestyle changes that would lead to a heightened self-efficacy and self-confidence in their ability to achieve or maintain better health. Incorporating treatment strategies for mental health distress and substance abuse may enhance lifestyle changes. In essence, interventions must attend to the realities of homeless women who may not recognize resources available to them that can help them achieve and maintain their highest level of health.

Limitations

There are limitations relevant to the cross-sectional design used in this study. First, the cross-sectional design does not lend itself to causal interpretation; no cause-effect relationships can be inferred. Data are collected at one point in time in a cross-sectional research design. It measures what exists today and does not attempt to document changes over time, past or future (Polit & Beck, 2004). Future research should

be designed longitudinally to determine the usefulness of the Health Promotion Model in predicting health promoting behaviors. In addition, other elements and constructs in the model should be examined for their usefulness in predicting health promoting behaviors of homeless women. Finally, a HPM based intervention could be designed to examine the effectiveness of the model as a framework for improving health promoting behaviors of homeless women. For example, homeless women could be educated about how to buy healthier but inexpensive food in a convenience store. A pre- post-test research design could be used to assess change in healthy lifestyle nutrition behavior.

Second, the HPM as shown in Figure 1 is a recursive model as all of the variables are directed toward health promoting behavior. In order for the model to be nonrecursive, it would need an added arrow (path) going from health promoting behavior back to prior related behavior and personal factors. As an individual performs a health promoting behavior, it becomes a prior related behavior and also may influence personal factors such as weight loss, increased self-esteem, and improvement in their social environment. The prior related behavior and personal factors then influence the behavior-specific cognitions and affect and cycle through to health promoting behavior. The advantage of having a nonrecursive model is that researchers could longitudinally observe cause and effect of interventions and behavioral outcomes and whether individual characteristics and experiences and/or behavior-specific cognitions and affect have an effect on behavior change.

Third, this study lacks generalizability beyond the geographic area of the participants. Further, the sample was obtained by convenience sampling of homeless women living in shelters during hot, sunny days in the late spring. Depending on the scheduling of the study, participants' use of shelters may vary with weather (hot, cold, or

rainy) and seasons (summer versus winter). If the inclusion criteria had included homeless women living in places other than shelters, the results may have been different. The study sites, urban settings in central North Carolina, excluded homeless women living in rural areas whose health-promoting behaviors may have been different. Thus, the study results can only be generalized to homeless women living in shelters in central North Carolina.

Fourth, participant self-selection excludes individuals whose health-promoting behaviors may be different than those who volunteer for such a study. Volunteers in a study that involves health promoting behaviors may attract persons who have positive cognitions about health and behaviors that can lead to good health. Thus, the study results may be biased in that there may not be representation from persons who intentionally do not practice health promoting behaviors resulting in higher scores on the HPLP II and SRAHP than otherwise would be found in the general population of homeless women. However, this did not appear to be a major limitation in the present study because scores were midpoint or lower on most of the scales and subscales.

Fifth, the use of self-report of health-promoting behaviors may trigger the reactivity effect or a need to please by the participant providing what she thinks is a socially expected answer. The effect of social desirability bias in homeless women's responses is unknown in this study.

Regardless of these limitations, the findings provide formative information about the health promoting behaviors of this vulnerable population of homeless women living in shelters. Future research should examine homeless women's health promoting behaviors over time. Seasonal and environmental factors need to be considered, and purposive sampling for women who meet criteria for specific interventions are needed.

Finally, questionnaires concerning health promoting behaviors should include a social desirability scale to detect any bias in responses.

Conclusions

This study is only the second study using Pender's (1996) HPM as a framework to examine health promoting behaviors of homeless sheltered women and expands the findings of Wilson's research (2005). In addition to the variables examined by Wilson, this study examined self-efficacy for performing a number of health promoting behaviors including psychological well-being, nutrition, physical activity, and responsible health practices. Other studies of homeless persons have examined unmet health needs, crises, stress and post-traumatic stress disorder, mental illness, negative lifestyles such as drug and alcohol use, smoking behaviors, barriers to control obesity, domestic and other violence, sexually transmitted diseases, and risk factors for death.

Homeless persons are 3 to 4 times more likely to die than their housed counterparts (O'Connell, 2005). Living in crowded shelters exposes the women to communicable diseases, complicates the management of chronic illnesses, accelerates the progress of common illnesses, and aggravates injuries. It is therefore imperative that nurses and other professionals and nonprofessionals who work with homeless persons reduce this high mortality rate through health promotion interventions. This study is one of two that has examined health promotion and factors that facilitate or inhibit a healthy lifestyle of homeless women. Health promoting behaviors that have been utilized in an individual's past may not be pursued during times of homelessness. However, attention to health promoting behaviors such as physical activity, nutrition, health responsibilities, stress management, interpersonal relations, and spiritual growth are necessary to attain

the highest level of health. Women should be encouraged to continue or begin positive health promoting practices while homeless.

Behavior-specific cognitions and affect were found to be associated with health-promoting behaviors in some groups but not in other groups. Barriers were viewed as a problem to health promotion in younger and middle aged persons but not in older persons. Self-efficacy and social support were found to have a strong association with health-promoting behaviors. Only one other study was found that examined health-promoting behaviors of sheltered homeless women, and that study only described health-promoting behaviors of the women and examined sociodemographic and health related activities in relation to health-promoting behaviors. This study adds additional knowledge about sheltered homeless women by examining the relationships of additional HPM concepts (e.g., self-efficacy, social/emotional support) and their health-promoting behaviors. This additional knowledge is important to nurses and other healthcare providers who work with sheltered homeless women because it provides areas for health promoting interventions. Self-efficacy has been a strong indicator of health promoting behaviors and behavior change and is a cognition that can be strengthened with intervention (Bandura, 1986, 1997).

Ways to enhance self-efficacy include enactive attainment, verbal persuasion, vicarious experiences (modeling a behavior), and physiologic feedback. Professionals working with homeless sheltered women could strengthen self-efficacy for health practices by interventions that include but are not limited to education about ways to routinely practice health-promoting behaviors while homeless, group interaction so the women can share ways to stay healthy while living in a shelter, and providing positive feedback and praise for each small accomplishment of health behavior change.

Nurses and other healthcare professionals also can intervene to promote healthy behaviors by promoting social and emotional support among sheltered homeless women while continuing to provide health services and teach about health promoting activities. Individual or group interventions can be supportive in that the women may just need a listening ear or a caring interaction. Additionally, mental health services need to be used and continued, and women who are prescribed or are in need of medications can be assisted to use appropriate community resources to obtain medications and continue their use. Finally, nurses and other healthcare providers need to encourage women who have mental health issues to follow through with their scheduled mental health appointments. The findings from this study can be used by nurses and other healthcare professionals as a foundation for identifying intervention and policy components that can be used to promote healthy behaviors among women who are homeless and living in shelters.

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APPENDIX

QUESTIONNAIRE/INSTRUMENTS

The questionnaire that includes three instruments is located in the Appendix. The three instruments are the Health-Promoting Lifestyle Profile II (HPLPII), Self-Rated Abilities for Health Practices (SRAHP), and Personal Health Form. Also included is a copy of the letter for permission to use the HPLP II (S. N. Walker, personal communication, October 26, 2006) and a copy of the email from Dr. H. Becker that gives the researcher permission to use the SRAHP

Respondent's ID # _____ **Lifestyle Profile II**

DIRECTIONS: This questionnaire contains statements about your present way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, **S** for sometimes, **O** for often, **R** for routinely

	Never	Sometimes	Often	Routinely
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, saturated fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life which I can not change.	N	S	O	R
18. Look forward to the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. East 2-4 servings of fruit each day.	N	S	O	R
21. Get a second opinion when I question my health care provider's advice.	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
25. Find it easy to show concern, love and warmth to others.	N	S	O	R

N for never, **S** for sometimes, **O** for often, **R** for routinely

26. Eat 2-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	N	S	O	R
35. Balance time between work and play.	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs and nuts group each day.	N	S	R	O
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, and sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R
48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with others through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

From:	Heather Becker [heatherbecker@mail.utexas.edu]	■ Add Contacts ■ Create Group ■ Filter Junk Mail ■ Show All Headers ■ Print View
Date:	Dec 15, 2006 8:32	
To:	"Frankie Ballard"<Frankie.Ballard@ncmail.net>	
Cc:		
Subject:	Re: Self-Rated Abilities for Health Practices: A Health Self-Efficacy	
Attachments:	(711 B) Self Rated Abilities scale (32 KB) (1 KB)	

Thank you for your interest in the Self Rated Abilities Scale; you certainly have my permission to use it. Please know that it was developed for people with disabilities, whose life experiences and disabling conditions may have made it difficult to build health promoting skills. When we have used it with the general public, we see a ceiling effect, because most of us consider ourselves able to perform these skills. Therefore I would encourage you to pilot test it with the types of individuals you would plan to use it with in your dissertation study. I've included a couple of our references describing the development and use of the scale in our research. Good luck with your study.

Becker, H.A., Stuifbergen, A., Oh, H. S., & Hall, S. (1993). Self-rated abilities for health practices: A health self-efficacy measure. Health Values, 17, (5), 42-50.

Stuifbergen, A. K., Becker, H., Blozis, S., Timmerman, G., & Kullberg, V. (2003). A randomized clinical trial of a wellness intervention for women with multiple sclerosis. Archives of Physical Medicine and Rehabilitation. 84, 467-476.

SELF-RATED ABILITIES FOR HEALTH PRACTICES SCALE

The previous items asked how often you do different health practices. The following statements ask whether you are able to perform various health practices within the context of your lifestyle and any disabilities. This includes any assistance you have available to you (for example, an attendant to help with stretching exercises). Read each statement and use the following scale to indicate **how well you are able to do each of the health practices, not how often you actually do it.**

0 = Not at all
1 = A little
2 = Somewhat
3 = Mostly
4 = Completely

I AM ABLE TO:

1.	Find healthy foods that are within my budget	0	1	2	3	4
2.	Eat a balanced diet	0	1	2	3	4
3.	Figure out how much I should weigh to be healthy	0	1	2	3	4
4.	Brush my teeth regularly	0	1	2	3	4
5.	Tell which foods are high in fiber content	0	1	2	3	4
6.	Figure out from labels what foods are good for me	0	1	2	3	4
7.	Drink as much water as I need to drink every day	0	1	2	3	4
8.	Figure out things I can do to help me relax	0	1	2	3	4
9.	Keep myself from feeling lonely	0	1	2	3	4
10.	Do things that make me feel good about myself	0	1	2	3	4
11.	Avoid being bored	0	1	2	3	4
12.	Talk to friends and family about the things that are bothering me	0	1	2	3	4
13.	Figure out how I respond to stress	0	1	2	3	4
14.	Change things in my life to reduce my stress	0	1	2	3	4
15.	Do exercises that are good for me	0	1	2	3	4

0 = Not at all
1 = A little
2 = Somewhat
3 = Mostly
4 = Completely

I AM ABLE TO:

16.	Fit exercise into my regular routine	0	1	2	3	4
17.	Find ways to exercise that I enjoy	0	1	2	3	4
18.	Find accessible places for me to exercise in the community	0	1	2	3	4
19.	Know when to quit exercising	0	1	2	3	4
20.	Do stretching exercises	0	1	2	3	4
21.	Keep from getting hurt when I exercise	0	1	2	3	4
22.	Figure out where to get information on how to take care of my health	0	1	2	3	4
23.	Watch for negative changes in my body's condition (pressure sores, breathing problems)	0	1	2	3	4
24.	Recognize what symptoms should be reported to a doctor or nurse	0	1	2	3	4
25.	Use medication correctly	0	1	2	3	4
26.	Find a doctor or nurse who gives me good advice about how to stay healthy	0	1	2	3	4
27.	Know my rights and stand up for myself effectively	0	1	2	3	4
28.	Get help from others when I need it	0	1	2	3	4

Personal Health Form

Respondent's ID # _____

Demographics

Age	What is your age? ___ Age in years ___ Don't' know /Not sure
Race/ethnic	Are you Hispanic or Latino? ___ Yes ___ No ___ Don't' know /Not sure Which one or more of the following would you say is your race? ___ White ___ Black or African-American ___ Asian ___ Native Hawaiian or Other Pacific Islander ___ American Indian or Alaska Native ___ Mixed race (please specify) _____ ___ Other (please specify) _____ ___ Don't' know /Not sure
Marital status	Are you…? ___ Married ___ Divorced ___ Widow ___ Separate ___ Single (never been married) ___ A member of an unmarried couple
Education	What is the highest grade or year of school you completed? ___ Never attended school or only attended kindergarten ___ Grades 1 through 8 (Elementary) ___ Grades 9 through 11 (Some high school) ___ Grade 12 or GED (High school graduate) ___ College 1 year to 3 years (Some college and technical school) ___ College 4 years or more (College graduates)

Children	How many children do you have? ____ List their ages and who they are staying with (with you, with family, with friends, foster care, adopted by another family member?) **Ages** **Who are they staying with? (you, family, friends, foster care, adopted by another family member)** ____ _____ ____ _____ ____ _____ ____ _____ ____ _____ ____ _____ ____ _____
Employment status	Are you currently …? ___ Employed for wages ___ Self-employed ___ Out of work for more than 1 year ___ Out of work for less than 1 year ___ Unable to work If you are employed, are you…? ___ Part time ___ Full time
Health status	How would you describe your health? ____ Excellent ____ Very good ____ Good ____ Fair ____ Poor ___ Don't know / Not sure
Health Care Access	Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare or Medicaid? ___ Yes ___ No ___ Don't' know /Not sure Was there a time in past 12 months when you needed to see a doctor but could not because of cost? ___ Yes ___ No ___ Don't' know /Not sure

	Where do you go for health care? ____ Doctor's office ____ Public clinic ____ Emergency Room ____ I do not go anywhere for health care. ____ Other
	How long ago did you have each of the following health check-ups? Mammogram ____ Less than 1 year ____ 1 to 2 years ____ 3-4 years ____ 5 or more years ____ Do not know/not sure Pap Test ____ Less than 1 year ____ 1 to 2 years ____ 3-4 years ____ 5 or more years ____ Do not know/not sure About how long has it been since your last visit for a routine checkup? Doctor ____ Less than 1 year ____ 1 to 2 years ____ 3-4 years ____ 5 or more years ____ Do not know/not sure Dentist ____ Less than 1 year ____ 1 to 2 years ____ 3-4 years ____ 5 or more years ____ Do not know/not sure Eye Doctor ____ Less than 1 year ____ 1 to 2 years ____ 3-4 years ____ 5 or more years ____ Do not know/not sure

	What prevents you from getting health care? (check all that apply) ____ Lack of money ____ Lack of transportation ____ Unsure where to go ____ No childcare ____ Afraid or nervous ____ Don't trust health care providers ____ Doctors ____ Nurses ____ Problems with language ____ Nothing ____ Other, please list _____ _____
Physical Health	Have you been told by a doctor, nurse, or other health care professional you have or had…? Arthritis ____ Yes ___ No ___ Don't know Asthma ____ Yes ___ No ___ Don't know Cancer ____ Yes ___ No ___ Don't know Chronic bronchitis ____ Yes ___ No ___ Don't know Diabetes (high sugar) ____ Yes ___ No ___ Don't know Heart disease ____ Yes ___ No ___ Don't know High blood pressure ____ Yes ___ No ___ Don't know Sexually transmitted diseases (STD) ____ Yes ___ No ___ Don't know Ulcer Stomach ____ Yes ___ No ___ Don't know Skin problems ____ Yes ___ No ___ Don't know
Mental Health	How many days has each of the following occurred in the past 2 weeks (the past 1 to 14 days)? *Write the number of days you had. . .* ____ Little interest or pleasure in doing things. ____ Felt down, depressed, or hopeless. ____ Trouble falling asleep <u>or</u> staying asleep <u>or</u> sleeping too much. ____ Felt tired <u>or</u> had little energy. ____ Poor appetite <u>or</u> eaten too much. ____ Felt bad about yourself <u>or</u> that you were a failure <u>or</u> let your family down. ____ Trouble concentrating on things, such as reading a newspaper <u>or</u> watching TV. ____ Moved or spoken so slowly that other people could have noticed? <u>Or the opposite</u> ____ Being so fidgety or restless that you were moving around a lot more than usual.

	Has a doctor or other healthcare provider EVER told you that you have or have had. . . ____Anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder). ____Depressive disorder (including depression, major depression, dysthymia, or minor depression).
Tobacco Use	Have you smoked at least 100 cigarettes in you entire life? ___ Yes ___ No ___ Never smoked ___ Don't' know /Not sure Do you now smoke cigarettes every day, some days, or not at all? ___ Every day ___ Some days ___ Not at all ___ Never smoked ___ Don't' know /Not sure During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking? ___ Yes ___ No ___ Never smoked ___ Don't' know /Not sure
Homeless History	Date you came to the shelter? _____ What are the reasons for being homeless at this time? ____ Physical illness ____ Emotional or mental illness ____ Drugs/alcohol ____ Violence ____ Legal problems ____ Relationship problems/conflicts ____ Loss of job ____ Eviction/lack of money to pay rent ____ Other, please list _____

	Where did you live before coming to the shelter? ___ With family or friends for how long? _____ ___ My own apartment or house for how long? _____ ___ Hotel for how long? _____ ___ On the street for how long? _____ ___ In prison for how long? _____ ___ Another shelter for how long? _____ Have you ever been homeless before: ___ Yes ____ No If so, when _____ how long _____ Were you in any type of foster care as a child? ___ Yes ____ No If so, when _____ how long _____
Emotional Support and Life Satisfaction	How often do you get the social and emotional support you need? ___ Always ___ Usually ___ Sometimes ___ Rarely ___ Never ___ Don't know / Not sure
Veteran Status	Have you ever served on active duty in the United States Armed Forces, either in the regular military or in a National Guard or military reserve unit? ____ Yes ____ No ____ Don't know